# WAGE FLEXIBILITY IN THE NSW AND US COAL INDUSTRIES

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## ABSTRACT

Wages in the NSW Coal industry are determined through a process involving a centralized wage fixing authority, the Coal Industry Tribunal, and mine by mine agreements. The responsiveness of wages to changes and differences in economic conditions, through time and across space, is limited by the actions of the Tribunal. A policy to disbandon the Tribunal may give rise to an industry structure similar to that in the US bituminous coal industry where two sectors, one dominated by centralized wage negotiations and the other by decentralized agreements has emerged. The decentralized sector displays a strange degree of wage responsiveness.

## INTRODUCTION

The history of coal mining is characterized by change. Both the supply of and demand for coal have been volatile ever since the industrial revolution. Even in comparatively recent times periods of excess demand have been followed by years of chronic over supply and depressed world prices. At least partially as a result of these violent fluctuations in economic conditions, the industry has been plagued by severe conflict between mine owners and labour. (Moore, 1989)

It is unlikely that the industry is destined for a more settled future. International forces which will act to destabilize the industry in the future are already apparent. For instance, the role that coal will play as world oil resources are diminished is as uncertain as forecasts of future oil discoveries and the ability of OPEC to regain its effectiveness as the cartel oil supplier. The situation is compounded by the prospect of carbon taxes and other government measures designed to overcome the so-called "greenhouse effect".

Changes will be a feature of the coal industry of the future and to cope with those changes, the industry will need to be able to respond quickly and effectively. This is a difficult task for an industry which is characterized by heavy initial capital investments and long lead times. However there are elements within the industry that could readily respond to changes. The labour market is such an element.

In the NSW coal industry the labour market is heavily influenced by the determinations of the Coal Industry Tribunal (CIT). Established in 1946 by the Coal Industry Act (Australian Government 1946) the CIT was tasked with the consideration and determination of industrial disputes. Under the Act, it has been the role of the Tribunal to determine the award paid to workers in the industry. Beneath the level of the Tribunal there are people appointed to act as Local Coal Authorities who have power to settle coal 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 matters on to the Local Coal Authority.

Negotiations to introduce changes in labour markets conditions through the institutional framework set up under the Act have been difficult to say the least. Decisions taken by the Tribunal in 1986 and 1988 marked turning points in the labour relations history of the industry but were achieved only slowly and with significant trauma to all parties (Smith, 1989). The question that must be asked is if the system affords sufficient flexibility to meet the continuing challenges of change.

Two aspects of labour market flexibility are of relevance. The first relates to the ability of the market to reflect

differing supply and demand variations across the individual mines which make up the industry. Wage differentials will emerge under ideal conditions to reflect these variations and economic efficiency in a static sense would be enhanced by a market institution which presented these differentials (Bennett, 1989). Secondly, flexibility across time periods is an attribute of an efficient labour market.

This paper seeks to analyze both of these aspects of flexibility in order to draw some conclusions as to the suitability of the current institutional arrangements in the coal industry labour market. The results presented tend to indicate that inflexibility is a feature of the CIT dominated market. In the light of these results, it is useful to consider options for change. One such option is a move away from the centralized wage determination system. If such a policy direction was pursued, it is unlikely that the whole industry would move to mine by mine labour negotiations. It is more likely that two segments of the industry would develop - one where negotiations are decentralized and the other where labour agreements are made in a centralized environment. Whether such an arrangement would provide greater flexibility is a matter for debate however, given its similarity to the situation existing in the USA coal industry, it is instructive to analyze that industry. The last part of the paper therefore presents data on the flexibility of wages in the US industry.


FLEXIBILITY

Without wage flexibility in its labour markets, inefficiencies will occur in the coal industry when changing supply and demand conditions arise. The labour markets will tend not to clear, under or over employment will arise and deadweight losses of social well-being will be felt. Changes in supply and demand conditions can arise both across space and through time. A flexible labour market will thus give rise to wage rates which vary both across space and through time according to the different supply and demand conditions applying at each point in space and time.

Given that supply and demand conditions are in fact variable across space and time, an indication of labour market flexibility would therefore be a strong degree of variability of wage rates - and levels of earnings - at any point in time across individual mines, and through time.

The structure of the NSW coal industry is one of strong variability of labour market supply and demand factors across mine sites and through time. A selection of these factors are listed in Table 1 for 40 mines in NSW along with their mean values, standard deviations and coefficients of variation for the years 1986-87 and 1987-88. The high values of the coefficients of variation in each year are indications of the high degree of variability in labour market conditions across

the state's mines, and the changes in these values between the two years shows the intertemporal variability.

| Labour Market Factor | 1986-87 | | | 1987-88 | | |
|---|---|---|---|---|---|---|
| | Mean | SD | CV | Mean | SD | CV |
| Av Price of Coal ($) | 34.15 | 9.45 | .28 | 30.25 | 7.51 | .25 |
| Productivity (Saleable coal per manshift) | 18.13 | 10.19 | .56 | 18.42 | 12.22 | .66 |
| Industrial Disputes (Manshifts lost) | 1884 | 1223 | .65 | 42{9 | 2110 | .49 |
| Industrial Accidents (Manshifts lost) | 228.2 | 114.9 | .50 | 224.4 | 103.9 | .46 |
| Capital Expenditure ($m) | 94.0 | 120.4 | 1.28 | 71.7 | 111.6 | 1.56 |

TABLE 1 : Variability of Labour Market Factors in NSW Coal
Mines, 1986-87 and 1987-88
Source    NSW Joint Coal Board.

A flexible labour market in the coal industry would reflect this variability.  An analysis of the performance of the NSW coal labour market follows.

## VARIABILITY IN THE NSW MARKET

Before the variability of wages and earnings in the NSW coal industry labour market can be assessed, it is important to outline the rather complicated structure of wages paid.  The wage paid to any miner is made up of three components:

      i)     award wage;
      ii)   overtime wage; and
      iii)  bonus payments.

The award wage component consists of the basic award rate and payment of special allowances for particular tasks or difficulties incurred including dirty work, erection of scaffolding, first aid, high work, longwall duties and transportation.  These rates and the number of hours to be worked are set out by the CIT when setting the award.

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 and the Award, through its designation of shifts, can also determine the hours of overtime worked.

However there is a degree of discretion as to the hours of overtime worked available to the mine owners.

Bonus payments have traditionally been outside the provisions of the Award, however the CIT'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 coal industry wage rates and earnings 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 and May 1988. The means, standard deviations, coefficient of variation and range for a number of wage and earnings variables over 40 NSW mines are displayed in Table 2.

| Wage/Earnings Variable | 1986-87 | | | | 1987-88 | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | CV | Range | Mean | SD | CV | Range |
| Average gross earnings per week | 846 | 123 | .14 | 616 | 855 | 150 | .17 | 954 |
| Average award earnings per week | 523 | 34 | .06 | 180 | 530 | 85 | .16 | 588 |
| Average overtime earnings per week | 104 | 39 | .37 | 172 | 163 | 162 | .99 | 1060 |
| Average bonus earnings per week | 218 | 107 | .49 | 487 | 176 | 80 | .45 | 713 |
| Average hourly wage rate | 23.86 | 3.68 | .15 | 12.97 | 23.14 | 2.80 | .16 | 13.60 |
| Average hourly award rate | 16.76 | 1.67 | .10 | 6.97 | 16.77 | 1.59 | .09 | 6.55 |
| Average hourly overtime rate | 24.58 | 3.57 | .14 | 16.84 | 25.90 | 4.85 | .19 | 22.94 |

TABLE 2: The extent of variability in wages/earnings and their components; 1986-87 and 1987-88.
Source : NSW Joint Coal Board.

In both years, the variability exhibited by average earnings per week is largely accounted for by the variability in overtime and bonus earnings. Award earnings display low relative variability and given the predominance of award earnings in the total earnings package, this has a strong influence over the variability of average gross earnings.

Similarly the variability displayed by the average wage rate is largely caused by the variability in overtime and bonus

rates across mines. The award rate, averaged across the 40 mines involved, was less variable.

A comparison of wage rate variability with earnings variability involves a standardization across mines for the number of hours worked. Earnings across mines will vary not only because of different hourly wage rates paid but also because of differing numbers of hours worked. For both years, the variability of average gross earnings was approximately the same as the variability of the average wage rate : coefficients of variation of .14 - .15 in 1986-87 and .16 - .17 in 1987-88. However the composition of the variabilities changed through time. It is apparent that in 1987-88 there was substantially greater variability in award earnings and overtime earnings even though variability of the award rate and the overtime rate did not change greatly. So whilst there was some increase in the degree of variability in earnings between the years, this appears to have been achieved largely through an increase in the variability of overtime hours worked.

The conclusion that can be reached after examination of Table 2 is that both wage and earnings variability exist in the NSW coal industry labour market, but that is true despite the effects of the centralized system of industrial relations negotiations. Variability is achieved through avenues outside the direct control of the CIT - largely the bonus schemes and the amount of overtime worked.

As far as variability through time s concerned, it is clear that there was little change in either average gross earnings or average wage rate, although after correcting for the impact of inflation, both experienced real falls. The changes however, are nowhere near the magnitude of the changes in the average price of coal which occurred between 1986 and 1988.

To some extent the variability of wages and earnings observed in Table 2 does not give a complete picture of the degree of flexibility existing in the coal industry labour market. Two factors specifically act to mask the true state.

First, overtime payments may not be as flexible as initial inspection indicates. Mine managers are often forced into the payment of overtime simply because of injury and illness in their normal hours work force. Hence overtime payments are made merely to maintain normal work schedules. It is also evident that some roster systems - particularly in open cut mines - are structures such that an element of overtime is compulsory. It is difficult to test the roster-overtime link in a statistically rigorous fashion given data availability, however the element of inflexibility caused overtime payments by illness and injury can be observed. Table 3 displays the correlation coefficients between overtime variables and the extent of injuries and illness.

| Correlation coefficients | Manshifts lost due to factors other than industrial disputes. | |
| --- | --- | --- |
| | 1986-87 | 1987-88 |
| Overtime hours worked | 0.78 | |
| Employees on overtime | 0.76 | 0.72 |
| | | 0.83 |

TABLE 3 : Correlations between overtime and the extent of illness and injuries in the workforce.
Source : NSW Joint Coal Board.

The strength of the correlations between overtime worked and shifts lost due to illness and injury (the principal cause of time lost other than industrial disputes) indicates that a high proportion of overtime payments are made simply to maintain normal work schedules. Hence overtime payments display less flexibility than was initially apparent.

The second factor that appears to mask the true extent of variability - especially in award wages - is the composition of the workforce employed at each mine. Because the Award is structured so that different classifications of employees receive different award rates it s conceivable that wage and earning variability can result simply from different workforce compositions apparent across the industry. The composition of the workforce across the 40 mines used for this analysis is significantly variable. Whilst the proportion of the mine workforce classified as "miners" averages out at 40% for both 86-87 and 87-88 the range is 60% and the coefficient of variation is 0.43. This variability however is not reflected by the variability of earnings. Table 4 displays the correlation coefficients between the proportion of the workforce classified as "miners" and the earnings variables.

| Correlation Coefficients | Proportion of the workforce classified as "miners" by the Award. | |
| --- | --- | --- |
| | 1986-87 | 1987-88 |
| Average gross earnings | -0.28 | |
| Average award earnings | -0.50 | -0.02 |
| Average overtime earnings | -0.03 | -0.07 |
| Average bonus earnings | -0.15 | -0.17 |
| | | -0.16 |

TABLE 4 : Correlations between earnings and mine workforce composition.
Source : NSW Joint Coal Board.

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Source : NSW Joint Coal Board.

The data of Table 4 gives little indication of a strong role for mine workforce composition in explaining the variability in earnings. This result is substantiated by an analysis of the variability of earnings for each classification of mine workers. Table 5 repeats the exercise undertaken in Table 2, but considers only the "miner" category of worker and only the earnings variables.

| Earnings Variables | 1986-87 | | | | 1987-88 | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | CV | Range | Mean | SD | CV | Range |
| Average gross earnings per week | | | | | | | | |
| | 784.36 | 184.40 | 0.23 | 11198.2 | 760.74 | 160.38 | 0.12 | 992.37 |
| Average award earnings per week | | | | | | | | |
| | 476.74 | 119.38 | 0.25 | 769.31 | 481.19 | 90.57 | 0.18 | 603.6 |
| Average overtime earnings per week | | | | | | | | |
| | | | | .39 | 101.19 | 49.52 | 0.49 | 205.17 |
| Average bonus earnings per week | | | | | | | | |
| | ?12.78 | 112.69 | 0.53 | 505.84 | 178.36 | 88.26 | 0.50 | 370.93 |

TABLE 5 : The extent of variability in earnings and their components for miners, 1986-87 and 1987-88.
Source: NSW Joint Coal Board.

The variability of earnings displayed within this single category of mine workers - as measured by the coefficient of variation -is actually greater than the variability shown on the comparable variables for the total mine workforce.

The degree of variability in earnings originally observed across the total mine workforce is therefore overstated because of the overtime factor but understated by the workforce composition factor. In addition, when it is recognized that the overtime factor limits earnings flexibility only in a downward direction, it may be concluded that the degree of flexibility afforded by the centralized system is not as poor as would be originally expected. There is no doubt however that despite these factors the level of flexibility provided by the centralized system of wage determination is inadequate especially through time when the coal industry is experiencing a period of such volatility.

## A US COMPARISON

If the NSW coal industry was to abandon the practice of centralized wage fixing through the CIT it is likely that the practice of centralized wage negotiation would not vanish. Rather, it could be expected that many mines would remain dominated by union workers and the bargaining power exerted by

these workers would be matched by an agglomeration of employees in some centralized form. However, through time it is conceivable that a non-union sector would arise with wage negotiations being undertaken on a mine by mine basis outside the umbrella of an industry agreement. The industry would then have a mixed structure with parallels to the situation existing in the US bituminous coal industry. A brief analysis of that industry's experience is therefore instructive in terms of providing a broad prediction of the outcomes of a mixed structure in NSW.

A projection from the US industry to NSW conditions is necessarily a tentative process because of the differences existing between the two industries' structures. The structure of the US industry has been particularly important as both a cause and effect of labour market outcomes (Schmidt, 1979). Hence it is necessary to gain an appreciation of the industry's structure and then maintain it as a caveat to any projections.

The three most important features of the US industry are the divisions existing between the Eastern and Western State mines, surface and underground mines and union and non-union workforces (Hannah, 1985). There are strong correlations between these divisions. The older eastern mines, predominantly underground, were the birthplace of the coal unions of the US. Although the industry was initially dominated by independent family or neighbourhood mines, the growth of mines tied to steel or power producers brought with it a growth in union power. Tied mines had greater opportunities to pass on union demanded wage rises to the consumers in oligopolistic final markets.

With development moving westward, companies which were not traditionally associated with coal mining, and hence were not part of established eastern union agreements, entered the industry. Many were strongly anti union and were willing to pay a wage premium for non union labour. In addition, because most new western mines were surface mines, there was little reliance on the use of the experienced, largely unionized, underground workforce of the Eastern mines. A younger labour force was attracted to the new Western mines.

The resultant picture is one whereby the west is dominated by non union mines where premiums are paid to ensure they remain non union. The perception amongst employers is that productivity is enhanced by non union status. Bonus schemes are a feature of the western mines, but non wage compensation is rare.

In the East, the unions are more dominant. A greater proportion of workers are employed underground and there is a stronger commitment to non-wage compensation to the older workforce. When the non-wage component is considered, the compensation package paid in union mines is in general higher than that paid in non-union mines.

With this structure in mind, it is instructive to analyze the distribution of wages in the various sectors of the industry. Table 6 displays the means, standard deviations and coefficients of variation for the underground and surface mines in 1988, further segmented by the presence of a union negotiated wage contract.

| | All Mines | Underground Mines | | | Surface Mines | | |
|---|---|---|---|---|---|---|---|
| | | All | Contract | Non Contract | All | Contract | Non Contract |
| Mean | 14.48 | 14.79 | 15.35 | 13.26 | 14.11 | 16.00 | 12.11 |
| SD | 2.51 | 1.67 | 0.70 | 2.60 | 3.34 | 1.08 | 3.71 |
| CV | 0.17 | 0.04 | 0.05 | 0.20 | 0.24 | 0.07 | 0.31 |

TABLE 6 : Hourly earnings distribution parameters - US bituminous coal mines, 1988.
SOURCE : US Department of Labour.

In both the underground and surface sectors, contracted workers receive higher average earnings. However in both sectors the standard deviations of the non contract distributions are greater. This is reflected by the differences between the coefficients of variation. For both surface and underground sectors, the coefficient of variation for non contract earnings is approximately four times that for the contract earnings.

It would therefore appear that in both sectors the impact of contracts is to push average hourly earnings up and to reduce sharply the variability of wages across mines.

This pattern is not unique to the 1988 data. Reference to data from 1976-81 provides some evidence that variability was lower then in contract mines. Unfortunately the data collected in the 1976-81 survey are not as complete as the 1988 data, with the contract - non contract division not being selected. However, the correlations existing between underground contract labour and surface with non contract, enable comparisons to be made. Table 7 presents those data.

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|        | All<br>Mines | Underground<br>Mines | Surface<br>Mines |
|--------|--------------|----------------------|------------------|
| Mean   | 6.93         | 6.97                 | 6.90             |
| SD     | 0.74         | 0.50                 | 1.26             |
| CV     | 0.11         | 0.07                 | 0.18             |

TABLE 7: Hourly earnings distribution parameters - US
Bituminous coal mines, 1976-81.
SOURCE : US Department of Labour.

The most useful comparison between the US and NSW industries
is to note that in 1987-88, the coefficient of variation for
the hourly earnings distribution of 40 selected NSW Black Coal
mines is 0.16. This is comparable with the 0.17 figure for
all US mines but higher than the contract mines both surface
and underground (0.07 and 0.05 respectively) and lower than
the non contract mines (0.31 for surface and 0.20 for
underground). So whilst it would appear that the NSW coal
industry labour market produces a greater degree of
variability - and can thus be implied to offer greater
flexibility - than the US contract sector, it is unable to
provide the variability and hence flexibility evident in the
US non-contract sector.


CONCLUSIONS

The NSW and US black coal industries and their respective
labour markets are far from identical in their fundamental
characteristics. Because of their differences, comparisons
can only be made with due caution. However, both industries
compete on international markets and a comparison is
instructive especially in terms of their respective abilities
to compete. With the international coking and steaming coal
markets subject to substantial volatili.", the ability of
producers to adapt quickly is an important attribute. Part of
the ability to adapt lies in the flexibility afforded the
industry by its labour market. This study has shown that the
flexibility of the NSW coal industry labour market is below
the level provided by the non-contract sector o. the US
bituminous coal industry. This result has implications for
the future viability of the NSW coal industry. Its success on
international markets would be enhanced by an improvement in
the flexibility of the labour market both across space and
time. Across space, improved flexibility would improve the
efficiency of the industry as the circumstances pertaining to
each mine would be reflected in the labour contracts written
for its workers. Across time, efficiency would also be

enhanced as resources could be re-allocated more quickly and more accurately with an improved labour market.

The ability of a two-tiered labour market to function in the US indicates that one pathway to a more flexible labour market for the NSW industry is through the abolition of compulsory centralized wage fixing. Allowing individual mines to negotiate contracts with their own workforce would introduce an element of flexibility into the industry. Whilst some of these contracts may end in disaster, others would ensure the success of those involved. The successes and failures would provide valuable information to the rest of the industry.

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