

**“LEAD BONUS HAPPY”:
PROFIT-SHARING AND PRODUCTIVITY
IN THE BROKEN HILL
MINING INDUSTRY,
1925-83***

by

John Shields

**SCHOOL OF INDUSTRIAL RELATIONS AND ORGANISATIONAL BEHAVIOUR
THE UNIVERSITY OF NEW SOUTH WALES
SYDNEY 2052**

j.shields@unsw.edu.au

JUNE, 1996

* The author wishes to thank Cathy Bennett (Charles Rasp Memorial Library, Broken Hill), Bruce Halliday (Pasminco Mining, Broken Hill) and Leigh Swancott (Melbourne University Archives) for facilitating access to relevant statistical data and also his colleagues, Bradon Ellem and Chris Wright, for casting a constructively critical eye over draft versions of this paper.

Introduction

With a few notable exceptions, economic and labour historians have also shown little interest in analysing the operation and impact of performance-based payment systems in Australia. This stands in stark contrast to the depth of historical interest shown in the determination of fixed (that is, time-, job- and skill-based) award rates under arbitration. Given the historical predominance of award rates in Australia's wages system, such a focus is certainly understandable. Yet the tendency to consign all extra-arbitral pay to the catch-all category of 'over-award pay' has served to conceal the role and importance of performance pay schemes in Australian workplaces. Such schemes are of two main types: individual incentive systems and group or collective performance pay schemes. Whilst Fry, Hagan and Fisher and Patmore have produced illuminating historical studies of piece-work-based individual incentive schemes in Australian industry¹, only Wright² has probed the history of collective performance pay.

Of the various types of collective remuneration, the oldest and perhaps best known are those which fall within the genre of 'profit-sharing'. Profit-sharing might be defined as a form of collectively-based, variable remuneration which seeks to link employee rewards to trends in firm or industry profitability by means of predetermined formulae for measuring and apportioning financial outcomes. In recent years, profit-sharing and associated modes of collective performance pay, such as 'gain-sharing' and employee share ownership, have undergone a significant revival in management theory and practice as employers have turned to new strategies designed both to attune labour costs more closely to organisational performance and profitability and to enhance employee motivation by emphasising the value of teamwork and commitment to organisational goals and values.³ Yet, despite the current level of interest in such schemes, surprisingly little attention has thus far been devoted to testing the claimed efficacy of collective incentives against the historical record. As Wright suggests: 'While managers of firms that have such schemes believe they are beneficial in improving organisational performance, relatively few have undertaken any systematic analysis of the effects of their profit-sharing schemes'.⁴

With a view to shedding more light on the long-term impact of such schemes, this paper examines the origin, development and impact of the oldest continuous scheme of profit-sharing in any Australian industry - the 'lead bonus' paid to mine employees in the Broken Hill lead-silver-zinc mining industry. The lead bonus has remained a prominent feature of surface and underground employment on the Broken Hill 'line of lode' down to the present day. Since its introduction in 1925, the bonus has been a key element in a wages system which has delivered to Broken Hill mine workers average weekly

1 Fry, E.C. (1956), 'Outwork in the 'Eighties. An Examination of Outwork in the Infant Industries of the Eastern Australian Colonies c.1889-90', *University Studies in History and Economics*, 2 (4), 77-93; Hagan, J. and Fisher, C. (1973), 'Piece-work and Some of its Consequences in the Printing and Coal Mining Industries in Australia 1850-1930', *Labour History*, 25, 19-39; Wright, C. (1993), 'Taylorism Reconsidered: The Impact of Scientific Management within the Australian Workplace', *Labour History*, 64, 34-53; Wright (1994); Patmore, G. (1994), '"American Hustling Methods" - the Lithgow Small Arms Factory 1912-1922', *Labour History*, no.67, 42-56.

2 Wright (1994).

3 Wright, C. (1994), 'A History of Incentive Payment Systems in Australia', in Wright, C. (ed.), *Incentive Payment Systems in Australia*, Department of Industrial Relations, Canberra, 21; Wright, C. (1995), *The Management of Labour: A History of Australian Employers*, Oxford University Press, Melbourne, 150.

4 Wright (1994), 11.

earnings far in excess of those of most other Australian wage-earners. At its first peak in the early 1950s, the bonus contributed almost half of mine workers' average weekly earnings; at its second, in 1980, it added an extra \$125 to the weekly pay packet of each mine employee, and throughout the 1980s it continued to add 25-30 per cent to workers' gross pay.⁵ The scale of total payments has been immense. In the scheme's first 40 years of operation, bonus payments to employees totalled \$115 million. In one year alone - 1952 - bonus payments exceeded \$10.8 million. By 1977, payments under the scheme totalled \$200, and by 1983 the cumulative total was \$289 million. The all-time peak in 1979-80 saw 4,000 mine workers receive a total of \$21 million in bonus payments, or an average of \$5,250 each.⁶ The scheme's longevity and scale present a rare opportunity to examine the long-term impact and efficacy of profit-sharing in an Australian industry.

By way of introduction, the paper provides a brief account of the historical usage of profit-sharing and the range of possible objectives for its adoption. The following section overviews the remuneration and industrial relations systems of which the bonus was part. These sections provide the essential context for the case study proper, which, after examining the origins and evolution of the bonus scheme, proceeds to a longitudinal analysis and evaluation of the scheme's operation and impact over a period of just under 60 years, from its introduction in 1925 to the centenary of mining at Broken Hill in 1983. The analysis is informed by both qualitative evidence and time-series statistical data on average weekly bonus payments, average weekly non-bonus earnings and average annual mine productivity.⁷ A conclusion summarises the key findings on the long-term impact and efficacy of the bonus and considers their wider implications.

Profit-sharing - Historical Usage and Management Purpose

Profit-sharing has had a long, if unspectacular, history. Originating as a distinct form of employee remuneration in France in the early 1840s⁸, it made its first appearance in Britain in the mid-1860s, where it was taken up by the Yorkshire colliery firm, Henry Briggs, Son and Co. following a intense industrial dispute over underground work practices.⁹ There were further waves of employer interest in Britain in 1889-92, 1908-9 and 1912-14, each coinciding with upsurges in labour unrest and rising rates of unionisation, and against the longer-term backdrop of intensifying international industrial competition.¹⁰ By 1912, 133 British firms, employing a total of 106,000 workers, were

⁵ Howard, W.A. (1992), 'The Rise and Decline of the Broken Hill Industrial Relations System', in K. Tenfelde (ed.), *Towards a Social History of Mining in the 19th and 20th Centuries*, C.H. Beck, Munich, 720.

⁶ Woodward, O.H. (1965), *A Review of the Broken Hill Lead-Silver-Zinc Industry*, 2nd edn., West Publishing Corp., Sydney, 321; Robertson, G. (1983), 'Industrial History', *Barrier Daily Barrier Daily Truth*, Centenary Souvenir Edition, Broken Hill, 10; Department of Mineral Resources, New South Wales, *Statistical Supplement to Report*, 1979-80, 48,49.

⁷ Since comparable data series are not available for the period since 1983, it has not been possible to extend the analysis beyond this point.

⁸ This earliest recorded scheme was that introduced by the Parisian house-painting firm, Maison Leclaire. This scheme evidently survived until at least 1920. Park, J. (1987), *Profit-sharing and Industrial Co-partnership in British Industry, 1880-1920*, Garland Publishing, New York, 39-44.

⁹ Church, R.A. (1971), 'Profit-sharing and Labour Relations in England in the Nineteenth Century', *International Review of Social History*, 16 (1), 3-8; Park (1987), 44-50.

¹⁰ Church (1971), 10.

conducting profit-sharing schemes¹¹ and the strategy had become the centrepiece of the labour policies of several major British industrial firms, including the South Metropolitan Gas Company, Lever Brothers and Cadburys. It had also become a central constituent of the 'systematic management' approach advocated by Edward Cadbury and other proponents of 'industrial welfarism'; a prominent British alternative to the individualised incentive pay strategies advocated by Taylorists and other exponents of 'scientific management'.¹² However, most pre-war experiments in profit-sharing were very short-lived, having an average life expectancy of around ten years.¹³ Moreover, whilst Taylorists and others repeatedly challenged the strategy's ability to enhance labour productivity, its class collaborationist overtones also drew strong criticism from sections of the British labour and socialist movements. The Fabian socialist publicist, Edward Pease, decried profit-sharing as a "piffling palliative".¹⁴

The practice attained the peak of its popularity in Britain and the United States during the economic boom of the mid-1920s and against the backdrop of the acute labour unrest of the years immediately following World War I. By 1929 there were over 500 such schemes operating in British industry, covering over a quarter of a million employees or about 2 per cent of British wage earners.¹⁵ Enthusiasm for profit-sharing ebbed following the collapse in profitability during the Great Depression of the 1930s, and since the 1940s, interest has waxed and waned in line with prevailing economic conditions, with most interest being shown during the cyclical booms of the 1950s-60s and 1980s.¹⁶

Historically, Australian employers have been less favourably disposed towards profit-sharing than either their British or United States counterparts. According to a 1931 survey of 76 Australian firms with 'systematic' welfare plans, only 6 had profit-sharing and related 'co-partnership' (that is, employee share-ownership) schemes.¹⁷ In 1947, only nine profit-sharing schemes were reportedly in operation in the Australian manufacturing sector. All but one of these had been introduced since 1939 and the total number of employees covered was just 1,500.¹⁸ A major survey of incentive usage in Australian industry, conducted in 1969, revealed that profit-sharing was present in only 3 per cent of all occupational groups affected by some form of incentive pay.¹⁹ Given this

11 Church (1971), 13.

12 Park (1987), 20-32; 231-41.

13 Church (1971), 13.

14 Church (1971), 12, 14; Park (1987), 153ff.

15 Scott, W.D. (1950), 'Incentive Payment Schemes Operating in Australia', in *Incentive Payments in Industry*, Economic Papers No.9, Economic Society of Australia and New Zealand (New South Wales Branch), Sydney, 7; Baddon, L. et. al. (1989), *People's Capitalism? A Critical Analysis of profit-sharing and Employee Share Ownership*, Routledge, London, 5.

16 Mitchell, D.J.B., Lewin, D., and Lawler, E.E. (1990), 'Alternative Pay Systems, Firm Performance, and Productivity', in Blinder, A.S. (ed.), *Paying For Productivity. A Look at the Evidence*, Brookings Institute, Washington D.C., 42-45.

17 Mauldon, F.R.E. (1931), 'Cooperation and Welfare in Industry', *The Annals of the American Academy of Political and Social Science*, November 1931, 185-6. Significantly, Mauldon also found that some of the largest and most sophisticated of these welfare schemes were located in the metal mining industry.

18 Scott (1950), 8.

19 Wright (1994), 18.

apparent aversion to profit-sharing on the part of Australian employers, and the typically short-lived nature of those schemes which have existed, the long attachment of the Broken Hill mining companies to the practice seems all the more remarkable; and all the more deserving of our attention.

What objectives, then, might be said to have informed the actions of the small minority of employers who, historically, have taken up profit-sharing? Whilst there is considerable diversity of view in the existing literature as to management's *primary* purpose in instituting profit-sharing, the range of *possible* objectives might be reduced to three broad categories: economic, behavioural, and industrial.

Economic objectives are reducible to two key goals: greater labour cost flexibility and improved labour productivity. By allowing overall labour costs to be varied automatically according to the employer's 'capacity to pay', profit-sharing is seen as providing a form of organisational insurance against external contingencies, particularly fluctuations in product market demand and prices. More positively, rewarding employees collectively for achieved or anticipated financial outcomes is seen as a direct means of inducing improved group co-operation and performance and, hence, productivity.

Behavioural objectives embrace a more diffuse set of aims in which the linkage with improved employee co-operation and performance is less instrumental and direct. This rationale, which emphasises broader motivational, attitudinal and cultural goals, is evident in both earlier 'industrial welfare' discourse and in 'soft' versions of contemporary human resource management theory. It posits a range of positive linkages between profit-sharing and organisational outcomes. It is suggested that a closer financial identification with, and commitment to the employer will generate both increased employee effort (including reduced absenteeism) and a culture of harmony, unity of purpose and corporate loyalty. Closer co-operation between employees, particularly via team-work and knowledge-sharing, will facilitate a more positive and pro-active attitude towards technological change and new methods of production. Awareness of the determinants of organisational profitability will encourage acceptance of the legitimacy of profits and more economical attitudes towards organisational resources.²⁰

Industrial objectives cover three main aims: industrial peace, union containment and union avoidance. These tend to be accorded explanatory primacy in the labour history and industrial relations literature. Studies of the origins and early development of profit-sharing place particular emphasis on broad industrial objectives, particularly union avoidance and the minimisation of strikes and other forms of industrial disruption. For instance, according to Church, the bouts of enthusiasm for profit-sharing and other welfarist methods amongst British employers prior to World War I are attributable primarily to the perceived need to combat union activism and labour unrest by more sophisticated means following the failure of traditional confrontational strategies.²¹ More generally, profit-share schemes are also seen as being motivated by the desire to contain or undermine union influence or to avert unionisation altogether.

These broad economic, behavioural and industrial objectives are by no means mutually exclusive. There is obvious overlap between all three. For instance, the improved economic efficiency is clearly predicated on the presence of favourable behavioural and

²⁰ Lawler, E.E., 1990, *Strategic Pay. Aligning Organizational Strategies and Pay Systems*, Jossey-Bass, San Francisco, 125-6.

²¹ Church (1971), 10, 16.

industrial conditions, whilst behavioural and industrial goals are clearly interconnected. It is important, therefore, to avoid the temptation to privilege one set of objectives above all others. However, behavioural goals might be best understood as a 'means' to the more tangible 'ends' of economic efficiency and industrial consensus. In this sense, the *primary* bipolarity is arguably that between economic and industrial objectives - between productive efficiency and management control. On this basis, what needs to be understood and explained is the shifting interplay over time between these two primary objectives. It is this approach which informs this case study of the 'lead bonus'.

Industrial Relations Context: Payment Methods and Bargaining Practices in the Broken Hill Mining Industry

For most of the period under investigation, the pay system applicable to Broken Hill mine employees comprised four tiers: (1) a local weekly basic wage covering all mine employees; (2) special weekly margins for particular job classifications, particularly skilled trades; (3) output-based contract rates for underground mining parties; and (4) payments to all mine employees under the lead bonus formulae. Tiers 1, 2 and 4 were determined through collective bargaining at peak body level and incorporated in unregistered industrial agreements covering all mine employees. Tier 3 was determined primarily by means of small-group direct bargaining.

This extra-arbitral system of collectively-bargained local industry agreements determined minimum wages, the lead bonus formulae, hours and working conditions in the Broken Hill mining industry from its introduction in 1925 until its abandonment in 1986. From 1935 on, agreements were renegotiated on a regular, triennial basis. The peak bodies involved were the Broken Hill Mining Managers' Association (MMA), representing most of the local mining companies, and the Barrier Industrial Council (BIC), representing all of the main mine unions, including the numerically dominant Workers' Industrial Union of Australia (WIUA), which covered underground miners and surface mine labourers. Except for occasional interventions by state and federal industrial tribunals, these negotiations were conducted independently of the centralised arbitration system, although agreement wage minima continued to be benchmarked against rates in outside awards.

As in the federal award system, the minimum wage rates specified in local mine industry agreements made to 1967 consisted of a weekly basic wage applicable to all mine employees plus special margins additional to the basic wage for specific job classifications. By the mid-1950s, practically all mine workers, including labourers, were receiving some margin above the basic rate. From 1925 to 1953, the local basic wage was subject to both automatic quarterly cost of living adjustment and flow-on effects from state or federal basic wage decisions. From 1925 to 1931, the basis of adjustment was movement in the Commonwealth Statistician's 'Cost of Living' index for the town; from 1931 to 1937, increments were tied to movements in the state living wage; and from 1937 to 1953 adjustment was based, firstly, on decisions in Commonwealth Basic Wage Cases, and, secondly, on changes in the weighted average of the Commonwealth C-Series ('All Items') 'Five Towns' index for New South Wales, which included Broken Hill. Following the end of automatic adjustment at the federal level in 1953, increments in the local basic wage were related to periodic (from 1956 annual) Commonwealth Basic Wage Case determinations.²² However, the local basic rate remained substantially higher than the federal minima, exceeding the latter by an average of

22 Woodward (1965), 301-8.

around ten per cent throughout the 1950s and 1960s.²³ As elsewhere, local margins were not adjusted automatically for price movement. However, the force of the 'comparative wage justice' criterion ensured that local margins kept pace with movements in outside award margins, primarily those in the federal Metal Trades Award.²⁴ With the substitution of a 'total wage' for the bifurcated wage system at the federal level in 1967, local industry agreements switched to prescribing single minimum rates for each job classification. Subsequent agreements continued the practice of adjusting these job minima in line with National Wage Case decisions.

Despite several early union attempts to eliminate payment by results, contracting remained the dominant mode of employment amongst underground workers. Contract miners continued to be paid on the basis of tons of ore raised until the 1960s, when the companies, led by the newest employer along the line of lode, New Broken Hill Consolidated, began replacing the ore tonnage rate with a rate per ton of metal extracted. However the practice of small group contracting remained firmly in place throughout the whole period under review.²⁵ Cognisance of the ongoing centrality of this system of small group payment by results is critical to a proper understanding of the operation and impact of the industry-wide lead bonus scheme.

Contract rates were determined by direct negotiation. Contract miners normally worked in four-man 'parties', with one pair drilling and blasting during one shift and the other pair retrieving the ore during the following shift. Each party was paid on the basis of tons of ore raised or, in the case of 'development' work, for each foot of drive shaft excavated. Contract rates were renegotiated on a fortnightly basis by means of direct bargaining between mining party members and their foreman. These subterranean negotiations, in which the miners' union took no direct part, focussed on the ease or difficulty of drilling and extracting ore from each party's work site, or 'stope'²⁶

The mine agreements prescribed only minimum or 'set to earn' rates for contract miners. Between 1935 and 1943 'set to earn' rates were laid down at 33 per cent above the minimum day rate specified in agreements for the class of work concerned, which meant that, like the day rates, they were adjusted automatically in line with movements in the cost of living index. In earlier and subsequent agreements, however, specific minimum money rates per shift were laid down for contract work.²⁷ From World War II on, basic wage increases were incorporated into contract earnings in the form of a 'cost of living allowance' per shift.²⁸

²³ Walker, K. (1970), *Australian Industrial Relations Systems*, Harvard University Press, Cambridge (first published 1956), 196.

²⁴ Woodward (1965), 306; Walker, K. (1970), 196-7.

²⁵ Tsokhas, K. (1986), *Beyond Dependence: Companies, Labour Processes and Australian Mining*, Oxford University Press, Melbourne, 198.

²⁶ Howard, W. A. (1990), *Barrier Bulwark: The Life and Times of Shorty O'Neil*, Willy, Kew, Victoria, 28-29, 39-40, 79-81; Howard (1992), 726-7.

²⁷ Maughan, B. (1947), 'Review of Industrial Negotiations 1920-1946', Typescript, Charles Rasp Memorial Library, Broken Hill, 18-19.

²⁸ Woodward (1965), 308.

The Origin of the Bonus: Company Welfarism and the 1925 Agreement

The lead bonus arose from a management proposal made during negotiations for the first local industry agreement, conducted in Melbourne and Broken Hill in early 1925. Why did the mining companies opt for profit-sharing at this juncture, why did they chose a uniform, price-linked bonus, and why, in particular, were the local unions prepared to embrace this new mode of remuneration? At first glance, the bonus proposal seems to have been little more than an opportunistic negotiating tactic played out in the context of a vigorous campaign for higher wages and shorter hours by a resurgent local union movement. Yet there are signs of a deeper shift in management outlook and strategy in the decade to 1925; a reorientation more favourable to profit-sharing and related methods. In broad terms, this might be characterised as a shift from an authoritarian approach, characterised by direct management control and low employee trust, to a neo-paternalist style, informed by corporatist assumptions and ostensibly co-operative and consultative practices. This shift was itself driven by deep-seated structural and industrial changes.

From 1915, control of local mining and ore-smelting operations shifted away from the once-dominant Broken Hill Proprietary Company Ltd. (BHP) to companies forming part of the emerging Melbourne-based mining and industrial conglomerate, the Collins House group. By 1916 the Collins House group controlled three of the eleven mining companies operating on the line of lode, namely North Broken Hill, Broken Hill South and the Zinc Corporation. The group's fourth and newest company, Broken Hill Associated Smelters, controlled the industry's main lead smelting centre at Port Pirie in South Australia. Over the ensuing decade, the group, under the joint directorship of Victorian financier and Legislative Councillor, W. L. Baillieu, and C. Fraser, consolidated its control over the local industry through a program of horizontal and vertical integration.²⁹ At the same time, the group moved to strengthen its influence over both the local Mining Managers' Association and the Melbourne-based executive body which exercised close supervision over the local organisation, the Committee of Representatives of Barrier Mines.³⁰

The growing influence of the Collins House group presaged a major shift in labour management strategy, although the change itself was neither thoroughgoing nor instantaneous. From its earliest years of operation, BHP had invariably pursued an authoritarian and confrontational approach to labour management; an approach carried to its logical conclusion under the influence of, G.D. Delprat, the company's abrasive general manager between 1899 and 1921.³¹ By contrast, under Baillieu's direction, the Collins House companies displayed a growing preference for paternalistic labour strategies; strategies informed initially at least by the tenets and agendas of 'industrial

²⁹ The group's position was bolstered by a long-term supply agreement made with the British government in 1918 under which the latter guaranteed to purchase at least 25 per cent of Australian output of zinc and zinc concentrates at high war-time prices. Richardson, P. (1987), 'The Origins and Development of the Collins House Group, 1915-1951', *Australian Economic History Review*, 27(1), 7-8, 19-26; Cochrane, P. (1980), *Industrialization and Dependence. Australia's Road to Economic Development*, University of Queensland Press, St. Lucia, 78-87.

³⁰ Formed during the 1909 lockout-strike, the Committee of Representatives of Barrier Mines remained in existence until 1937 and throughout that time exercised close control over local management policy and strategy. Maughan (1947), 4.

³¹ Kennedy, B. (1978), 59-60, 64-71, 95, 102-9; Trengove, A. (1975), 'What's Good for Australia ...!' *The Story of BHP*, Cassell Australia, Sydney, 38-47, 71-85, 111-19.

welfare'.³² The bonus itself is best understood as the culmination of this gradual and often tension-ridden process of strategic change. The meeting at which the original bonus offer was made took place at Collins House headquarters in Melbourne in January 1925; a meeting chaired by W.L. Baillieu himself.³³ It was only after the bonus scheme had become a *fait accompli* for the industry that BHP, which had withdrawn from the Melbourne negotiations, agreed to comply.³⁴

The Collins House group had first applied systematic welfarist strategies at the Port Pirie smelting facilities which it had acquired from BHP in 1915. Supported by Baillieu and Fraser, the then joint managing director of Broken Hill Associated Smelters at Port Pirie, W.S. Robinson, employed erstwhile journalist and industrial consultant Gerald Mussen to apply welfarist remedies in this company town. Over the ensuing two years, Mussen introduced a range of measures, from company stores and housing estates to sickness and accident funds and holiday camps. At the same time, management initiated a largely successful campaign of financial inducement and subtle intimidation designed to transform the local union branches, including the Port Pirie sub-branch of the Amalgamated Miners' Association, into de facto company unions. So successful were these initiatives that they effectively pacified the town's workforce.

In 1918, with metal demand and prices on the rise and the Amalgamated Miners' claiming an immediate increase in award wages, the welfarists redirected their efforts to the far more formidable challenge of reacculturating the miners of Broken Hill. The Melbourne Committee conceded the wage increase and established a Barrier Industrial Association to launch various "betterment" initiatives, with the constituent companies pledging almost £43,000 towards a 'welfare trust' for this purpose. These moves appear to have been instigated by Fraser, who was Broken Hill South's managing director, and his loyal lieutenant, the South mine's general manager, W.E. Wainwright. In early 1919, Mussen was despatched to Broken Hill to implement the strategy.³⁵ However, the radicals decried his proposals as "palliatives; sops, and doles to chloroform the worker"³⁶ and, within weeks, Mussen's activities were overtaken by the beginning of the 'Big Strike' of 1919-20. These initiatives were undoubtedly motivated in large part by a perceived need to placate rising workforce grievances over mine health and safety. Indeed, at this juncture, welfarism was a stock management response in workplaces with a high incidence of industrial injury and disease and it was no accident that the key issues in the 1919-20 strike were those of reduced underground hours, improved mine safety and compensation for miners affected by industrial disease. and disease. As

³² Despite important differences in strategic emphasis, both styles were essentially 'unitarist' in nature, both emphasising primacy of 'management prerogative'. For a useful typology and historical overview of management styles and strategies, including traditional authoritarianism and paternalism and neo-paternalism or industrial welfarism, Wright (1995), 4-6, 18-35.

³³ *Barrier Daily Truth*, 22 January 1925; Richardson (1987), 26; Carroll (1986), 73.

³⁴ Maughan (1947), 80.

³⁵ Kennedy, B. (1978), 149, 161-2; Kennedy, B. (1984), *A Tale of Two Cities. Johannesburg and Broken Hill, 1885-1925*, Melbourne University Press, Melbourne, 103-4; Kennett, J. (1981), 'Fraser, Sir Colin', in Nairn, B. and Serle, G. (eds), *Australian Dictionary of Biography*, vol. 8, Melbourne University Press, Melbourne, 576-77; Kennedy, B. (1986), 'Mussen, Sir Gerald', in *ibid.*, vol. 10, 653-4; Robinson, W.S. (1967), *If I Remember Rightly*, Cheshire, Melbourne, 159-62.

³⁶ This hostility and suspicion was undoubtedly fuelled by Mussen's close association with anti-union publicist J.E. Davidson, the new owner-editor of both the Port Pirie *Recorder* and the *Barrier Miner*. The *Barrier Miner* already had a well-established reputation as the main pro-company mouthpiece in opposition to the Amalgamated Miners' own vehicle, the *Barrier Daily Truth*. See: Kennedy, B. (1986), 654; Kennedy, B. (1978), 161-2.

Wright notes, geographical isolation also played a significant part in the introduction of company welfarism at this time.³⁷

Significantly, the welfarist impulse also exposed major strategic differences within management ranks. The approach alienated the hard-liners, including BHP's irascible general manager, G.D. Delprat, who, in 1918, withdrew BHP from the MMA.³⁸ The issue also revealed differences of view on labour strategy within the Collins House group itself. The general manager of the North mine, G. Weir, preferred the traditional confrontational approach. Conversely, several of the group's more 'radical' senior executives, including W.S. Robinson, advocated profit-sharing as the best means of ensuring industrial harmony³⁹, whilst at least one prominent middle manager, namely South mine underground manager, Andrew Fairweather, urged the introduction of both profit-sharing and a joint consultative body - an 'Industrial Council' - along Whitley Council lines. Anticipating the 1925 initiative with remarkable accuracy, Fairweather advised his superiors in 1918:

By every argument we ought, if possible, to adopt profit-sharing on the Broken Hill field. For this field a profit-sharing scheme should be so arranged that the bonus received per working shift ... should be the same for each Mine. We must have a definite contract or compact.⁴⁰

Mussen, too, seems to have embraced this view, supporting Robinson's idea of a 'lead bonus' in negotiations with the mining unions during the 1919-20 strike.⁴¹ However, the dominant view, espoused by Baillieu and Fraser, was that selective initiatives in the areas of worker housing, leisure and civic amenity, all overseen by a single 'industrial expert', would be more effective, less costly and less susceptible to subversion than profit-sharing and 'co-partnership'. As Fraser put it in a terse note to Robinson opposing the idea of profit-sharing: "tuppence in comforts be worth sixpence in wages".⁴² This in-house debate over management strategy was not fully played out until 1925, when Baillieu and his fellow executives, now caught between booming metal prices and a resurgent union movement, were finally tempted to gamble on the profit-sharing option.

As we have seen, the original bonus offer came at a peak-level meeting between unions and management held in Melbourne in January 1925. The Melbourne meeting flowed from a union ultimatum for direct talks with company executives after repeated attempts throughout the preceding year to force the MMA to the bargaining table on a general log

³⁷ Wright (1995), 23.

³⁸ Trengrove (1975), 116.

³⁹ As early as 1915, Robinson was advocating a ten per cent bonus on all wages at Port Pirie and Broken Hill. See: Robinson to Baillieu, 27 April 1921, Box 1, File 1, and 'Start of the Lead Bonus' (Diary extracts 1915-16), Box 6, File 65, W. S. Robinson Papers, Melbourne University Archives; Fraser to Robinson, 20 March 1919, Sir Colin Fraser Papers, Broken Hill Associated Smelters Collection, 1/37/11/2 Melbourne University Archives.

⁴⁰ Fairweather, A., 'Paper' (typescript), 24-7, in 'What's Wrong With Broken Hill?', Sir Colin Fraser Papers, Broken Hill Associated Smelters Collection, 1/18/5/11, Melbourne University Archives; Carroll (1986), 50-52.

⁴¹ Kennedy (1986), 654; Robinson to Baillieu, 27 April 1921, Box 1, File 1, W.S. Robinson Papers, Melbourne University Archives.

⁴² Fraser to Robinson, 13 February 1919, 20 March 1919, Sir Colin Fraser Papers, Broken Hill Associated Smelters Collection, 1/37/11/2, Melbourne University Archives; Kennedy, B. (1981), 'Gepp, Sir Herbert William', in Nairn, B. and Serle, G. (eds), *Australian Dictionary of Biography*, vol. 8, Melbourne University Press, 641.

of claims for all mine employees. The union ultimatum followed the effective expiry of the award which had settled the 1919-20 strike and in the context of a surge in international metal prices, which saw lead prices rise towards £40 sterling per ton. The unions, through the BIC, claimed a £1 increase in the existing local basic wage, higher overtime rates, reduced standard hours (30 hours per week underground; 35 for surface workers) and paid annual holidays for underground workers. Rejecting all union claims, the Melbourne directors countered with an offer of a formula-based variable bonus. The companies argued that 'while it is true that some of the companies at Broken Hill are at present lead prices, making a good profit, there have been, and will be again, low prices'.⁴³ The proposed bonus was to be payable fortnightly to all mine employees and based on the average of spot and forward prices of lead on the London Metal Exchange in the month prior. The original offer was for 3d. per shift for each £1 increase in price above £33 per ton. The bonus was not to apply during any period of strike action or unavoidable cessation of production.⁴⁴

Whilst adhering to their key claims, the union delegates seized on the offer as a concrete expression of 'the companies' acceptance of the principle of the workers' sharing in the prosperity of the industry'. They claimed a commencement price of £25 and a higher, graduated bonus scale.⁴⁵ Reinforcing this counter-claim, the local union newspaper, the *Barrier Daily Truth*, editorialised that the original offer 'would be a substantial concession if viewed through a most powerful magnifying glass' and represented 'a miserable attempt to convey the idea that the companies have endeavoured to be conciliatory'.⁴⁶ In Broken Hill, a mass meeting of 2,500 WIUA members resolved overwhelmingly that the bonus offer was 'unacceptable to this union on the basis of the existing hours and wages'.⁴⁷ The miners demanded further negotiations at the local level on the main union claims, a decision subsequently endorsed by the BIC.⁴⁸

At an abortive conference between the BIC and the MMA, held in Broken Hill on 9 February, the companies again refused to alter existing wages and conditions. Management representatives were also quick to reject union claims that the bonus offer was tantamount to an acknowledgment of the employee's right share in the profits of the industry. The bonus, it was suggested, was merely a 'gratuity' and not a form of profit-sharing: 'You have never been partners in that industry ... and if you are entitled to the prizes in that industry, God help mining'. The continued impasse prompted veiled threats of strike action from the WIUA leadership.⁴⁹

43 *Barrier Daily Truth*, 15 and 22 January 1925.

44 *Barrier Daily Truth*, 22 January 1922.

45 *Barrier Daily Truth*, 24 January 1925; 'Lead Bonus', 3, (Typescript extract, dated 26 February 1946, from transcript of Melbourne Conference, 21 January 1925), Box labelled 'History of Lead Bonus', North Broken Hill Ltd. Collection, Melbourne University Archives.

46 *Barrier Daily Truth*, 27 January, 30 January 1925.

47 *Barrier Daily Truth*, 2 February 1925.

48 *Barrier Daily Truth*, 6, 9 February 1925.

49 'Report on Conference between representatives of Broken Hill Mining managers' Association, Barrier Industrial Association (sic), and Iron Trades Council, held ... 9th February, 1925, ...', 7,-8, 11, 15, File on 'Conferences with Unions, 1924-1940', Broken Hill South Ltd. Collection, Melbourne University Archives; *Barrier Daily Truth*, 5 February 1925.

By this stage, however, there were growing signs of division between the WIUA and other unions over the bonus offer. The second largest union on the line of lode, the strategically powerful Federated Engine Drivers' and Firemen's Association, had already signalled in-principle support for the bonus and a willingness to compromise on the starting price.⁵⁰ There were signs, too, that the leadership of the BIC, which was dominated by moderates from unions other than the WIUA, was increasingly sympathetic to this position. The local mine managers seem to have been well aware of this softening in the union leadership's attitude and alert to the possibility that the moderates might accept a trade-off between the wage claims and the bonus.⁵¹

After a round of public posturing, during which the miners' pressed ahead with preparations for strike action⁵², the companies offered several concessions 'as a final effort to maintain industrial peace'. They agreed to the automatic quarterly adjustment of the existing basic wage (£4 10s. per week) for any increase in the Commonwealth statistician's retail price index for Broken Hill above the then ruling rate. In addition, whilst continuing to deny any acceptance of the profit-sharing principle, they offered a more generous bonus scale, ranging from 2d. per shift for each £1 price rise between £30 and £32 to 4d. per shift for each £1 rise between £40 and £44. The companies also offered a guaranteed minimum bonus of 1s. 6d. per shift (equivalent to 7s. 6d. per week for underground workers and 9s. weekly for surface workers) for the first year of the proposed agreement, conditional on both continuity of production and a union undertaking to adhere to the terms of the proposed agreement for a period of three years.⁵³

In the wake of an industrial stand-off extending over many months, the unions evidently sensed that this was the best they could hope to achieve without a repeat of the privations of 1919-20, a prospect which few would have relished. All BIC affiliates, including the WIUA, quickly accepted the revised offer and after the resolution of several minor issues the industry's first three year agreement was duly finalised in April 1925.⁵⁴ Despite the apparent gains, it is clear that many local unionists regarded the new agreement as a mixed blessing. Indeed, after signing the agreement, the BIC's founding president, E.P. O'Neill, a leading moderate, remarked that 'We have signed it like a girl getting married - against her will'.⁵⁵ Clearly, the unions continued to harbour the suspicion that the bonus might in future be used as a substitute for higher base wages.

Viewed in long-term perspective, then, the bonus proposal held elements of both strategic premeditation and bargaining expediency. Whilst it lacked the full overtones of unitarist social engineering so audible in the welfarist agenda, it certainly carried similar undertones. The Collins House group's growing links with British capital may also have been instrumental here. As we have seen, the decade to the mid-1920s saw a surge of

50 *Barrier Daily Truth*, 5 February 1925.

51 *Barrier Daily Truth*, 5, 10 February 1925.

52 *Barrier Daily Truth*, 12, 19 February 1925

53 'Report of Conference between Broken Hill Mining Managers' Association, Barrier Industrial Council, and Iron Trades Council, held ... 20th February 1925 ...', File on 'Conferences with Unions, 1924-1940', Broken Hill South Ltd. Collection, Melbourne University Archives; *Barrier Daily Truth*, 21 February 1925.

54 *Barrier Daily Truth*, 23, 27 February, 25 April 1925; Maughan (1947), 74-8; Carroll, B. (1986), *Built on Silver. A History of Broken Hill South*, Hill of Content, Melbourne, 73-4.

55 *Barrier Daily Truth*, 25 April 1925.

interest in profit-sharing and other welfarist schemes in British management thought and practice; a trend which clearly aroused the interest of London-based executives like Robinson and Govett. The industry-wide nature of the bonus proposal also accorded closely with the Collins House group's corporate interests. Whilst potentially disadvantageous to the less profitable mines, it was also far less likely to generate employee unrest than separate, enterprise-specific profit-sharing schemes. As local managers like Fairweather were well aware, the likelihood of wide disparity in payment levels under such schemes would certainly have encountered determined union resistance.⁵⁶

Evolution of the Bonus Formula

In its first year of operation - the guarantee year - the bonus delivered employees an average of 10s. 6d. per week, boosting the average weekly earnings of contract miners by 6 per cent. In 1926, however, the average bonus was only 2s.3d. and in 1927 it disappeared completely as world metal prices began to fall in the lead-up to the Great Depression. Despite attempts in 1927-28 to renegotiate the original formula, the 1925 agreement remained operative on three months' notice of termination until the beginning of 1931, with no further bonus being paid. Several formula changes favourable to employees were introduced under new agreements made in 1931 and 1932, including lower commencement prices and higher rates per £1 increase in price. However, the 1932 formula, whilst applying a lower cut-in price of £16 Sterling (in lieu of a direct 1s. increase in the basic wage), also provided for the suspension of further bonus payments until the price per ton surpassed £20 Sterling. The same agreement also applied the first upper limit to bonus earnings, capping the combined basic wage and bonus at £6 Sterling per week. However, no further bonus payments were made until 1935 when a new lower price limit of £16 Australian was introduced and lead prices entered a phase of sustained growth. In 1939, with bonus payments rising, an upper limit of £2 Australian was applied to weekly bonus earnings.⁵⁷

Despite many subsequent attempts by management to reduce the level of bonus payments, the 1935 cut-in price of £16 Australian (\$32) per ton remained the benchmark throughout the rest of the period under review, as did the bonus rate of 6d. (5c.) per shift for each £1 (\$2) increase in price. The major changes to bonus arrangements throughout this period were four-fold. First, in 1940, the defined price was altered from the average of London 'spot and forward' prices in the month prior to payment to the average realised price of all lead sold by the companies in the month prior. Second, in 1943 the unions successfully pressed for the removal of a £2 cap on weekly bonus earnings. The removal of the upper limit proved to be permanent. Third, the 1943

⁵⁶ It is possible that the concept of a universal, price-linked bonus was first suggested to Collins House executives by the then secretary of the Melbourne Trades Hall Council, E. J. Holloway. In a 1963 reminiscence, Holloway claimed to have been instrumental in arranging the Melbourne conference at the request of the Broken Hill unions, in persuading W.L. Baillieu of the merits of a prosperity bonus as a means of harmonising industrial relations in the industry, and in allaying residual union apprehensions about the bonus idea. Holloway certainly attended the Melbourne conference. He also had a long history of involvement in Broken Hill's industrial affairs, having participated in the bitter 1892 dispute over the introduction of the contract system and assisted in fund-raising efforts for the miners during the 1919-20 strike. Whatever its merits, though, Holloway's claim remains uncorroborated. It also conveniently underplays both management's earlier interest in profit-sharing and the local unions' initial determination to press on with their original claims after the collapse of the Melbourne negotiations. See: Holloway, E.J. (1963), 'Idea the Transformed Broken Hill', *The Age*, 20 March 1963; Hammond, B. (1970), "'The Spuds and Onions Strike': The Origins and Course of the Broken Hill Strike 1919-20", B.A. (Hons) Thesis, School of History, Melbourne University, Appendix 1, 8, 13,16.

⁵⁷ Maughan (1947), 12-16, 152-3, 156-7, 166; Woodward (1965), 315-8.

agreement, which was finalised only after intervention by a Commonwealth Conciliation Commissioner under war-time regulations, provided for the withdrawal of the lead bonus for a breach by any union or group of workers of a requirement not to engage in a 'go slow' policy. This too became a permanent feature of subsequent agreements. A fourth enduring modification came in 1947 when, after considerable internal debate, the unions accepted a management proposal that half of all bonus earnings above £2 (\$4) should be banked compulsorily on each employee's behalf, evidently with a view to converting portion of the bonus into a superannuity.⁵⁸

Table 1, below, summarises the chief changes in bonus formula between 1925 and 1983.

⁵⁸ Maughan (1947), 204-6, 229, 232; 271; Woodward (1965), 318-9.

TABLE 1
FORMULAE FOR THE LEAD BONUS, BROKEN HILL MINING INDUSTRY, 1925-83

Year Of Agreement	Minimum Commencement Price (Av. price per ton ¹)	Bonus Rate Per Shift (weekly equivalent bracketed)	Upper Limits On Earnings And Other Conditions
1925	£30<£32 £32<£40 £40<£44	2d. (1s.) for each £1 rise in price 3d. (1s. 6d.) for each £1 rise in price 4d. (2s.) for each £1 rise in price	Guaranteed minimum of 1s. 6d. per shift (9s. per week) for first 12 months of agreement
1931	£21+	6d. (3s.) for each £1 rise in price	
1932	£stg16<£stg17 £stg17 >£stg17-£stg20 >£stg20	6d. (3s.) 1s. (6s.) No additional bonus 6d. (3s.) for each £stg1 rise in price	Combined basic wage and lead bonus not to exceed £stg1 per shift (£stg6 per week)
1935	£A16 (=£stg12/16)+	6d. (3s.) for each £A1 rise in price	Combined basic wage and lead bonus not to exceed 26s. per shift (£A6/10s. per week)
1939	£A16+	6d. (3s.) for each £A1 rise in price	Lead bonus limited to 8s. per shift (£A2 per week)
1943	£A16+	6d. (3s.) for each £A1 rise in price	No upper limit on earnings
1946-83	£A16/\$A32+	6d. (3s.)/5c. (30c.) for each £A1/\$A2 rise in price	No upper limit on earnings; From 1947 half of any bonus >£A2 per week to be banked on employee's behalf

1. 1925-40 - average of London spot & forward prices in month prior to pay period.
1940-47 - average realised price per ton in month prior to pay period.
1947-83 - average realised price per ton in month but one prior to pay period.

Sources: Maughan (1947), 10-18; Woodward (1965), 217-18.

Outcomes under the Bonus

We now turn to the central concern of the study - the long-term economic and industrial consequences of the bonus scheme and, in particular, to two central questions: firstly, did the bonus enhance or inhibit productivity growth?; and, second, is the scheme's longevity and apparent success attributable primarily to its micro-economic impact or to its industrial effects.

Annualised data on pay and productivity outcomes under the scheme for the period 1925-83 are detailed in Appendix A. On the basis of the trends in pay and productivity revealed by these data, the 58 year review term can be broken into five distinct periods: (1) 1925-35; (2) 1935-52; and (3) 1952-63; and (4) 1963-72; and (5) 1972-83. The trends for each of these periods are summarised in Table 3, below. The table provides data on weekly lead bonus payments, full-time average weekly contract earnings, combined contract and bonus earnings, the percentage contribution of bonus payments to combined earnings, average annual total mine employment, and average annual ore tonnage raised per mine employee. The latter represents the best available indicator of mine productivity.

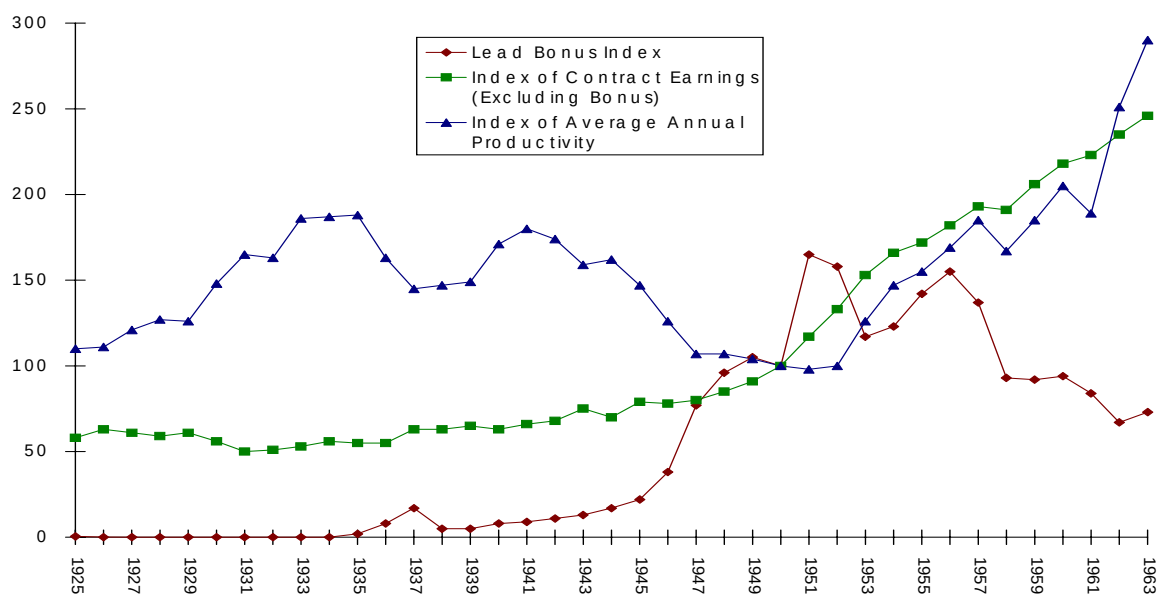
TABLE 2
NET CHANGE PER PERIOD IN BONUS PAYMENTS, CONTRACT EARNINGS,
EMPLOYMENT AND PRODUCTIVITY, 1925-1983

Period	Net change in lead bonus		Net change in contract earnings		Net change in total mine employment	Net change in productivity (tons/employee)
1925-35	-7s.	4d.	-8s.	9d.	-2221	+160
1935-52	+306s	2d.	+222s.	11d.	+3079	-182
1952-63	-180s	2d.	+324s.	1d.	-2318	+390
1963-72	+\$8.52		+\$42.43		+702	-31
1972-83	+\$32.91		+\$237.25		-1,214	+215

Sources: Walker (1970), 190,196; Department of Mineral Resources, Statistical Supplements, 1968-9 to 1982-3; Broken Hill Mining Managers' Association, 'Underground Contractors' Earnings', 1967-8 to 1971-2, Broken Hill South Ltd. Collection, Melbourne University Archives, Pasminco Mining, Broken Hill (contract earnings data for 1979-83).

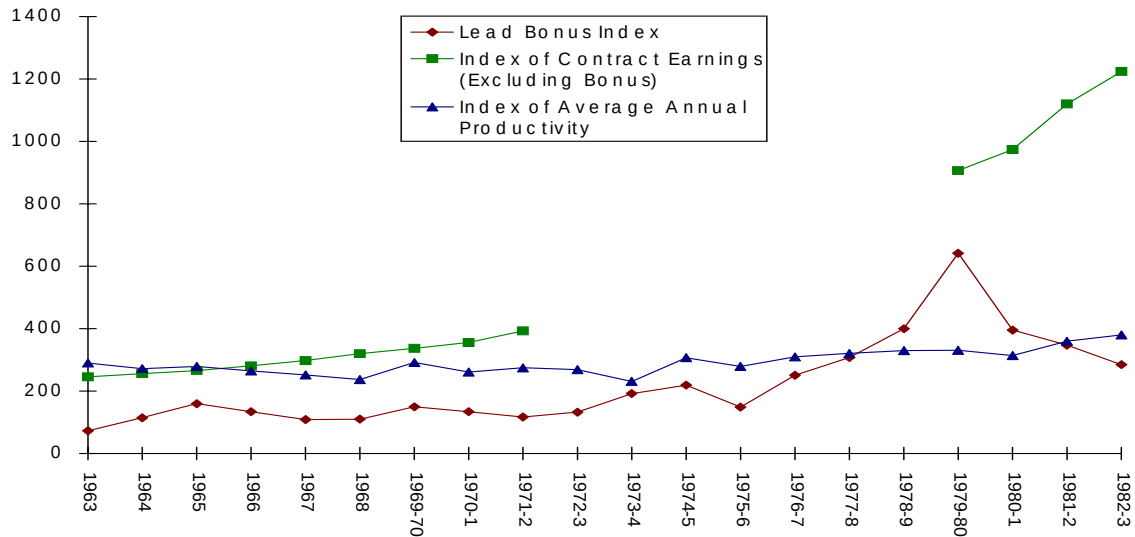
Figure 1A charts the time series on bonus payments, contract earnings and productivity for the first three periods (1925-63) in the form of growth indices using 1950 as the base year, whilst Figure 1B does the same for the final two periods (1963-83). The outcomes and trends for each period are analysed in detail in the discussion which follows.

FIGURE 1A
BROKEN HILL MINING INDUSTRY:
INDICES OF LEAD BONUS PAYMENTS, CONTRACT EARNINGS,
AND PRODUCTIVITY, 1925-1963
(1950=100)



Sources: Walker (1970), 190, 196.

FIGURE 1B
BROKEN HILL MINING INDUSTRY:
INDICES OF LEAD BONUS PAYMENTS, CONTRACT EARNINGS,
AND PRODUCTIVITY, 1963-1983
(1950=100)



Sources: As for Table 2.

1925-35

This period was characterised by negligible bonus payments, rapidly rising productivity and a marginal decline in average contract earnings. Although the commencement price for bonus payments was lowered progressively from £stg30 in 1925 to £stg16 in 1932, international lead prices remained too depressed between 1926 and 1934 to deliver bonus payments under any of the formulae then applied. The absence of any significant bonus effect makes this a useful 'control' for analysing developments in subsequent periods.

The combination of a substantial increase in productivity and a slippage in contract earnings points to a sustained decline in contract rates in the decade to 1935. This, after all, was the period of the Great Depression - of low metal prices, mine closures, substantial retrenchment from operating mines, local labour market over-supply, and a relative decline in union influence at the point of production. The period also saw a major round of mine takeovers and capital concentration by the Collins House companies, a development which strengthened the companies' bargaining power still further.⁵⁹ This combination of adverse product market, labour market and institutional factors meant that contract employees were unable to translate higher productivity into higher contract earnings. In this respect, the outcomes from the contract system undoubtedly favoured the companies rather than their employees.

Productivity improvement during this period derived from two main sources. The first, evidenced by declining contract rates, was an intensification of underground and surface labour. The second was technological change. In 1931, in response to collapsing prices and savage international competition, the Collins House companies embarked on a

⁵⁹ Richardson (1986), 20.

major efficiency drive. The early 1930s saw a series of major innovations in underground and surface operations. The opening in 1932 of a joint, company-run power generation station gave the main mines access to electricity and compressed air which, in turn, opened the way for a string of underground technical innovations. These ranged from mechanical conveyors, skip loaders and light-weight compressed air drills to electrically powered lighting, pumping, winding and winching.⁶⁰ At the same time, surface processing operations were transformed to handle larger volumes of ore more efficiently. By 1934, the planned modernisation of the Collins House mines was largely complete.⁶¹

1935-52

This period saw a dramatic reversal of earlier trends. After modest increases in bonus payments during the war, payments rose rapidly in the immediate post-war years, with growth being spurred by both rapidly rising lead prices and the removal of the upper limit on bonus earnings in 1943. By the late 1940s, according to one management estimate, South mine employees were receiving, in bonus form, over 20 per cent of company revenue accruing from lead price increases above the £16 per ton base price.⁶² By 1951 bonus earnings comprised almost half of contract workers average weekly earnings. Contract earnings also rose, albeit in a far less spectacular fashion. By contrast, the period saw a marked long-term decline in mine productivity - from an annual average of 386 tons per employee in 1935 to just 200 tons in 1951 - the lowest rate since the early 1920s. Productivity deteriorated most sharply in 1935-37 and 1944-47. This trend was broken only by a brief upward movement in productivity during the late 1930s and the early years of World War II.

The combination of steadily rising contract earnings and falling productivity points unequivocally to a sharp increase in contract rates, particularly in the immediate post-war years. It is clear, then, that neither of the main payment systems - output-based contracting and the bonus - was working effectively at this juncture to enhance productivity. Indeed, the one appears to have been negating the other.

In large part, the long-term decline in productivity in this period derived from a reversal of market and institutional trends which had driven productivity upwards prior to 1935. Once the Depression had eased, the unions began to reassert control over the local labour market using a series of job closure devices including a bar on the employment of outsiders. From 1932 on, the WIUA, backed by the BIC, permitted membership only to those workers who were either born or educated locally or had lived within a 100 mile radius of the town for a minimum of eight years.⁶³ In the mid-1930s, job committees emerged to co-ordinate rank and file policy and action at the point of production. Communist-inspired, these committees used 'go-slow' tactics to force increases in contract rates in open defiance of the union leadership and the triennial agreements.⁶⁴ The growing strength of organised labour also enabled the mine unions to defend traditional manning levels, particularly via the enforcement of the WIUA's contentious

⁶⁰ Woodward (1965), 485-6.

⁶¹ Cochrane (1980), 86.

⁶² Fairweather, A. to Baillieu, M.L., 6 April, 1 June 1949, Box labelled 'History of Lead Bonus', North Broken Hill Ltd. Collection, Melbourne University Archives.

⁶³ Solomon, R.J. (1988), *The Richest Lode. Broken Hill 1883-1988*, Hale and Iremonger, Sydney, 91; Howard (1990), 87.

⁶⁴ Maughan (1947), 147-50, 184-9; Walker (1970), 214-15.

'two men, one machine' rule for drilling operations. The resurgence of organised labour undoubtedly contributed to the permanent closure of two of the field's oldest producers, the BHP and Central mines, in 1939 and 1940, respectively.⁶⁵

War-time labour shortages reinforced the miners' bargaining power even further, allowing them to secure a series of major gains in pay and conditions. The conciliated 1943 agreement delivered war loadings, higher overtime rates, an end to the lead bonus cap and an extra week's paid annual leave, with the latter obviously contributing to a lowering of average annual output per employee.⁶⁶ Technical factors also contributed to the war-time slump in productivity. In particular, underground operations were seriously hampered by a forced switch to difficult to work hardwoods for underground timbering following the loss of supplies of North American softwood timber used extensively prior to the war.⁶⁷ This is not to suggest that the period was bereft of technical innovation. After a decade of cautious experimentation, during the early 1940s the companies, lead by the Broken Hill South, adopted a radical new technique for filling worked stopes. Hydraulic filling, which made use of treatment plant residue pumped from the surface, allowed mined stopes to be stabilised more rapidly and reliably than via the traditional method of rock filling, or 'mullocking', thereby enabling faster progression to through the ore body.⁶⁸ However, even this pioneering innovation failed to arrest the war-time decline in productivity.

The deterioration in productivity continued throughout the immediate post war years. In the context of an ongoing labour shortage and rapidly rising metal demand and prices, the balance of bargaining power remained firmly with the unions. The labour shortage became so acute that when, in 1950, management appealed to the miners' to relax their stringent residential requirement for union membership, the rank and file agreed narrowly to extend the residential qualification from 100 miles to 300. Whilst this had the effect of making Adelaideans eligible to work in the mines, the concession came only on condition that preference in employment went automatically to local, or 'A Group', members over newcomers, or 'B Groupers'.⁶⁹

Far from countervailing the overall trend to lower productivity, it seems that the steep rise in bonus levels in the mid-1940s may actually have exacerbated the decline. As the bonus windfall soared, contract miners appear to have moderated their work effort, contributing to a further decline in productivity. What we appear to have here is the beginning of a process of income substitution. Figure 2, below, demonstrates the strength of the inverse long-term correlation between productivity and proportional bonus earnings during this period and the next. As the graph indices indicate, the more moderate decline in productivity after 1947 was synchronous with a less rapid increase in relative and absolute bonus earnings. The introduction in the same year of provision for the compulsory banking of half of each worker's bonus entitlement may also have deterred direct income substitution by reducing employees' *disposable* bonus income.

⁶⁵ Solomon (1988), 89.

⁶⁶ Maughan (1947), 225-33.

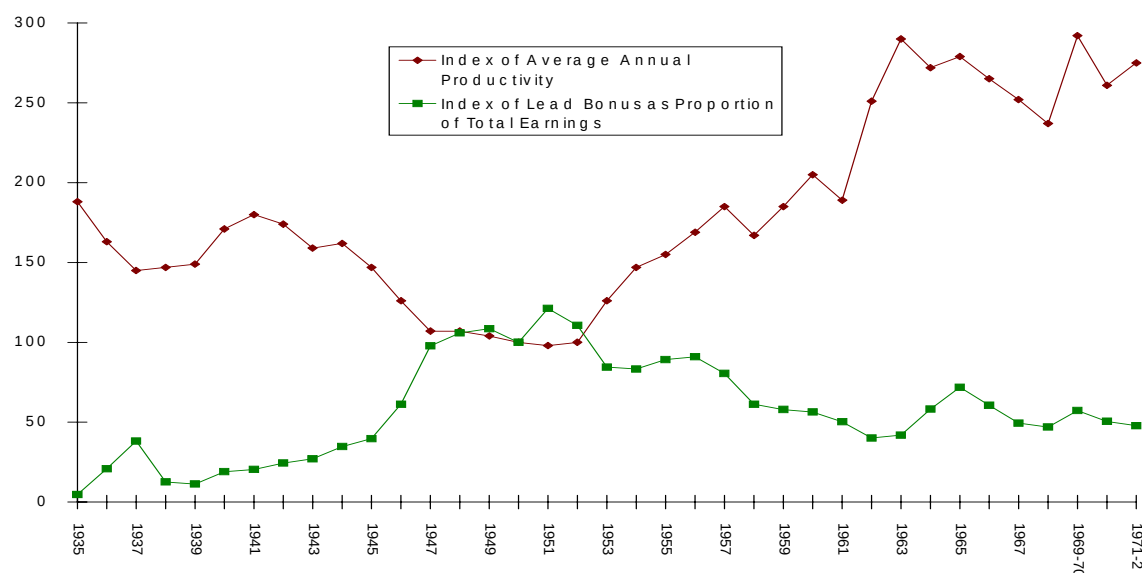
⁶⁷ Maughan (1947), 235-6.

⁶⁸ McLeod (1992), 'Arnold Black and Hydraulic Fill', Mineral Heritage Oration, The Australian Institute of Mining and Metallurgy Annual Conference, Broken Hill, 17-21 May 1992, The Australian Institute of Mining and Metallurgy, Melbourne, 10-14; Carroll (1986), 9-3.

⁶⁹ Walker (1970), 219-21; Tsokhas (1986), 183; Solomon (1988), 91; Howard (1990), 87-88.

The onset of post-war price inflation may also have moderated the income substitution effect at this time.

FIGURE 2
BROKEN HILL MINING INDUSTRY:
INDICES OF PRODUCTIVITY AND LEAD BONUS PAYMENTS AS A PROPORTION OF CONTRACT
MINERS' TOTAL WEEKLY EARNINGS, 1935-1972.
(1950=100)



Source: As for Table 2.

Throughout the immediate post-war period, then, rising lead bonus levels were, if anything, inhibiting rather than enhancing employee performance.⁷⁰ High bonus levels blunted the contract system's potential to improve underground efficiency. In 1949, Andrew Fairweather, now a director of Broken Hill South Ltd., conceded that 'It has frequently been argued by our critics - and we agree - that this bonus is not "an incentive" but the very reverse of it ... Under the present scheme, everyone backs up his cart for a load...' The scheme, argued Fairweather, should either be replaced completely by an output-based collective bonus or radically overhauled to provide for a doubling of the base price and a reduction in increments.⁷¹ During hard-fought negotiations for a new agreement in the same year, the MMA sought unsuccessfully to have the base price increased to £40. By the early 1950s, senior London executives of the Zinc Corporation was decrying 'a Lead Bonus Scheme bearing no relation to effort, costs, or profits' and lamenting 'the lack of effort by labour induced by a high standard of living too easily obtainable'.⁷²

It is important to add, though, that the gains won by the miners in the post-war years were not entirely cost free. As we have seen, one quid pro quo for the introduction of more generous bonus entitlements in the mid-1940s was the provision for suspension of payments during the course of any 'go-slow'. Another apparent concession involved an

⁷⁰ cf. Tsokhas (1986), 195.

⁷¹ Fairweather, A. to Baillieu, M.L., 6 April, 1 June 1949, Box labelled 'History of Lead Bonus', North Broken Hill Ltd. Collection, Melbourne University Archives.

⁷² Tsokhas (1986), 193-5.

undertaking by the union leadership to withdraw recognition from the job committees and isolate communist militants within the WIUA. By 1946 the shop committee system had been all but eliminated.⁷³

Moreover, despite the escalating level of bonus payments, the bonus system itself retained much of its original appeal to management as a counter to union claims on other fronts. In the context of booming demand and metal prices, the companies were both well-placed to absorb rising labour costs and reluctant to initiate any changes to work methods and pay practices which might provoke a prolonged industrial stoppages. There was therefore little likelihood of management abandoning the bonus completely. Being contingent on continuity of production, the bonus offered management an effective measure of insurance against industrial disruption. Equally, in the highly-charged industrial relations atmosphere of the immediate post-war years, management found that the threat of the system's withdrawal presented it with an effective counter to the unions' more "extravagant" claims.⁷⁴ The strategy, it seems, was far from misplaced. As one Zinc Corporation executive remarked of the 1949 agreement: 'the companies had "given away very little" in return for "three years of industrial peace"'.⁷⁵ During the hard-fought negotiations for the same agreement, in which the MMA conceded only one of 70 claims in the union log, the president of the Mining Managers' Association, G.R. Fisher, observed that the bonus "had been a great feature of the industrial life of Broken Hill and it would be the desire of all to continue it".⁷⁶ The year before, W.S. Robinson, one of the principle architects of the bonus, had intimated to Fisher that there were 'Only two "peaceful" spots in Australia to-day - Broken Hill and Mount Isa; both pay the bonus'. Robinson simply cautioned Fisher against 'publicising' the scheme's generosity too widely.⁷⁷

1952-63

In this period, management gradually regained the balance of bargaining power and the trends of the preceding period were reversed. Global metal demand and prices fluctuated around a downward trend, culminating in a major market recession between 1958 and 1963. Lead bonus payments followed suite, with the downward trend punctuated only by a brief upward movement coinciding with a boom in base metal prices during the Korean War. As a proportion of contract miners' total earnings, bonus levels fell from an unprecedented high of 49 per cent in 1951 to just 16 per cent in 1962. Productivity levels, by contrast, improved sharply during most of this period, with average annual tonnage per employee increasing almost three-fold to a peak of 593 tons in 1963.

At the same time, the period witnessed the dissolution of the Collins House combine and the rise of new mining conglomerates, a major generational change at senior management level, a weakening of the group's hitherto strong Anglo-Australian links, and a move towards a 'separate rather than co-operative' approach by several of the old group's constituent companies.⁷⁸ Symptomatic of these developments was a partial

⁷³ Maughan (1947), 219-20, 229; Howard (1990), 40-3.

⁷⁴ Tsokhas (1986), 172; Walker (1970), 229

⁷⁵ Tsokhas (1986), 172.

⁷⁶ Solomon (1988), 101; Walker (1970), 229.

⁷⁷ Robinson to Fisher, 12 July 1948, 4 August 1948, W.S. Robinson Papers, Box 6, File 65, Melbourne University Archives.

⁷⁸ Carroll (1986), 108-12; Richardson (1987), 28-9.

reversion to authoritarianism in labour management style, particularly on the part of the successors of the old Zinc Corporation, namely the Consolidated Zinc Corporation (est. 1949) and Conzinc Riotinto of Australia (est. 1962).

As was the case in 1925-1935, enhanced industry performance was associated with a burst of technological change. The period saw a substantial refinement in existing techniques, the introduction of a new range of underground equipment and an unprecedented round of labour shedding. Bar-mounted rock drills, forged drill bits, hand shovelling and hand trucking gave way to light airleg drills, tungsten-carbide bits, electric scrapers and pneumatic loaders.⁷⁹ In large part, this technical transformation was a calculated management response to a rapid growth in bonus levels and unit labour costs in the previous period.

To capitalise on the technical innovations and to reassert control at the point of production, management pursued a program of workforce rationalisation and retrenchment. From 1954 on, companies experimented with Taylorist time and motion study techniques in a bid to rationalise manning levels and re-rate contract work.⁸⁰ As a consequence, between 1951 and 1963 the total mine workforce declined from 6,400 to 4,100, with the greatest level of retrenchment coinciding with the international metal market recession of 1958-63. During the downturn, management used threats of further retrenchment, mine closure and resort to arbitration to impose shift reductions and to break union bans on weekend work. By 1961 the more aggressive companies were even contemplating an all-out assault on the 'two men, one machine' rule following the introduction of lighter compressed-air drilling machines capable of solo operation.⁸¹ Beset by deep internal ideological division, bitter interpersonal rivalry at the leadership level, and serious friction between 'A Group' and 'B Group' workers, the unions were forced to beat a strategic retreat, fighting a rearguard action to minimise job losses, protect seniority entitlements and preserve existing rates.⁸² By the end of the period, management had had considerable success in translating productivity gains into lower contract rates. Whilst contractors' earnings kept pace with rising productivity throughout the 1950s, during the recession of the early 1960s they lagged appreciably behind.

This period also saw the first moves transform the contract system itself. The most successful drive for mechanization and cost reduction came from the newest operator on the line of lode, New Broken Hill Consolidated. Established in 1936 as an off-shoot of the old Zinc Corporation to develop low-grade deposits on its southern leases, New Broken Hill was compelled to adopt a more aggressive approach to labour management than most other operators.⁸³ It was New Broken Hill which made the first move to modify the contract system, replacing the practice of payment per ton of ore with a rate per ton of metal extracted.⁸⁴

79 McLeod, (1992), 15.

80 Tsokhas (1986), 173, 189-93.

81 Tsokhas (1986), 175-6, 180-1, 195; Carroll (1986), 128.

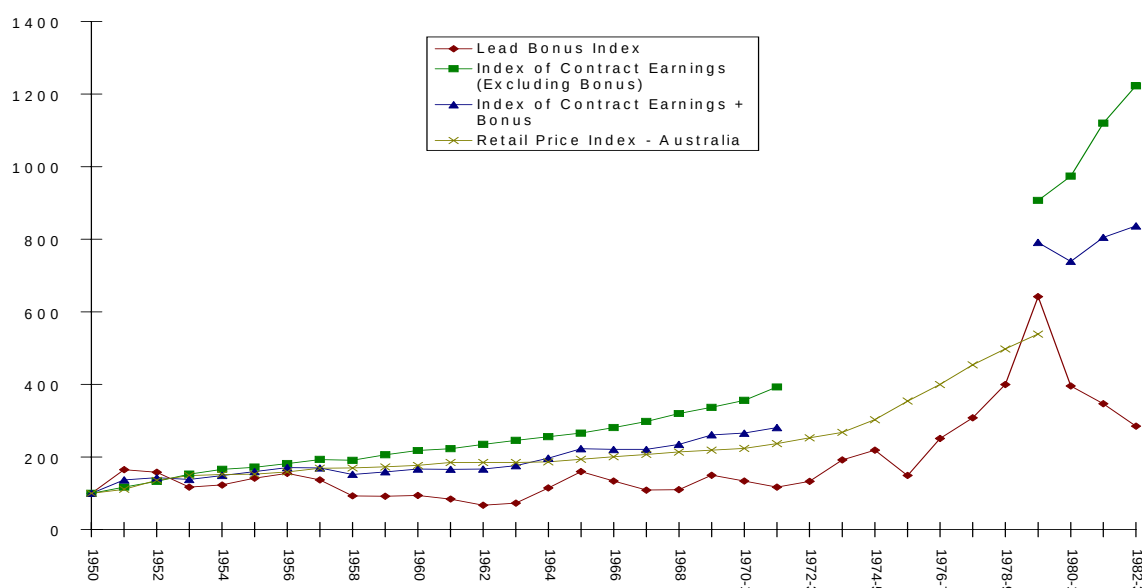
82 Tsokhas (1986), 176, 179-84, 196-8.

83 Tsokhas (1986), 178; Richardson (1987), 27; Solomon (1988), 89-90.

84 Tsokhas (1986), 198.

As the period progressed, the miners came to regard the bonus more as a wage entitlement than a contingent reward.⁸⁵ Yet, given the prevailing trends, this perception actually seems to have worked in the employers' favour. The diverging trend lines revealed in Figure 2, above, suggest that the decline in relative and absolute bonus earnings after 1952 served, if anything, to reinforce the underlying growth in productivity. As bonus earnings declined, contract workers responded to the threat to total earnings by intensifying work effort in a bid to substitute one income source for another. The high level of retail price inflation prevailing during the early to mid-1950s would have reinforced this effect as contract miners sought to maintain real income standards, particularly after the abolition in 1953 of automatic quarterly cost of living adjustment of the federal basic wage and, hence, of its local equivalent. As the graph indices in Figure 3, below, reveal it was only by increasing the output-based component of earnings that miners were able to keep pace with retail price inflation during the 1950s and early 1960s.

FIGURE 3
INDICES OF RETAIL PRICES (AUSTRALIA), CONTRACT EARNINGS,
LEAD BONUS AND COMBINED CONTRACT AND BONUS EARNINGS, 1950-1983
(1950 = 100)



Sources: As for Table 2; and Vamplew (ed.) (1987), 214.

There is great significance in the fact that the lead bonus did survive the productive reorganisation which characterised this period. In part, this was because the unions were determined to maintain the bonus entitlement; in part, it was because management, despite its determination to effect new cost efficiencies, remained ambivalent about the worth of the bonus system. In fact, the bonus was one of the few areas in which the unions managed to 'hold the line' in all triennial mine agreement negotiations conducted throughout this period. During negotiations for a new agreement in 1960, the companies proposed an increase in the bonus commencement price. After brief industrial action, the unions referred the matter to arbitration and the President of the New South Wales Industrial Commission ruled that the bonus should remain

⁸⁵ Cubbon, H.A., Gardner, G.J., Oeser, O.A., and Trahair, R.C.S. (1966), *Work and Negotiation in the Broken Hill Mining Industry*, Department of Psychology, University of Melbourne, 73.

unchanged.⁸⁶ There was no subsequent attempt to revive the matter. Clearly, having tried and failed, management was reluctant to press the issue further: 'A change which would "stir up irritation" was not worth the trouble', confided one senior executive of Consolidated Zinc in 1962.⁸⁷ The bonus's shortcomings as a mode of incentive pay certainly remained of concern to some senior managers, particularly those most removed from the mines themselves. For instance, in 1961, one member of the British board of the Zinc Corporation urged the introduction of a new pay system which provided 'an incentive for working harder when prices are low [and] a penalty for working less hard when prices are good'.⁸⁸ However, the dominant view on the company's Australian board was that the existing bonus arrangement, with its penalty provisions, at least lessened the likelihood of the unions taking drastic action in response to efficiency measures.⁸⁹ This sentiment appears to have been held even more strongly by the on-site managers.

Whilst the local unions did, in fact, use go-slow tactics in a bid to resist cuts in contract rates, the penalty provisions attached to the bonus made them reluctant to initiate mass strike action. The contrast with the militancy of their fellow unionists on the coalfields could not have been greater. Between 1922 and 1951 the Broken Hill industry experienced only 56 reported stoppages, causing a loss of 587,965 person-days. In coalmining, by contrast, the period 1930-51 saw 9,645 stoppages, with a loss of almost 9.6 million person-days.⁹⁰ As Figure 4, below, indicates, between 1925 and 1963 the New South Wales metal mining industry, of which Broken Hill was the epicentre, experienced far lower rates of time loss through strike activity than did the coalmining industry. This apparent aversion to direct action prompted claims by some local militants that the union leadership, if not the rank-and-file, had become "'lead bonus happy" and apathetic'.⁹¹ To be sure, strike action was far from uncommon amongst metal miners during these decades and those strikes which did occur were of significantly longer average duration than those in coalmining. However, strike action in metal mining had a far lower level of average employee involvement and tended to be highly localised.⁹² This was because much of the strike activity which did occur was extra-union in nature, with contracting parties instituting direct action over rates and conditions in their own particular stopes. The period 1925-63 saw only two outbreaks of official mass strike action by metal miners. Both coincided with periods of retrenchment, major productive reorganisation and low or declining bonus levels. The first occurred during the early 1930s when bonus payments were zero. The second occurred during the recession of the late 1950s, when bonus levels were in sharp decline. As Walker⁹³ has argued, it would be overly simplistic to attribute the long record of relative industrial peace solely to the effects of the lead bonus. Yet, as the same observer, writing at the end of the 1960s, willingly conceded:

86 Walker (1970), 218; Carroll (1986), 106, Tsokhas (1986), 196.

87 Tsokhas (1986), 177, 197.

88 Tsokhas (1986), 196.

89 Tsokhas (1986), 196.

90 Walker (1970), 467-8.

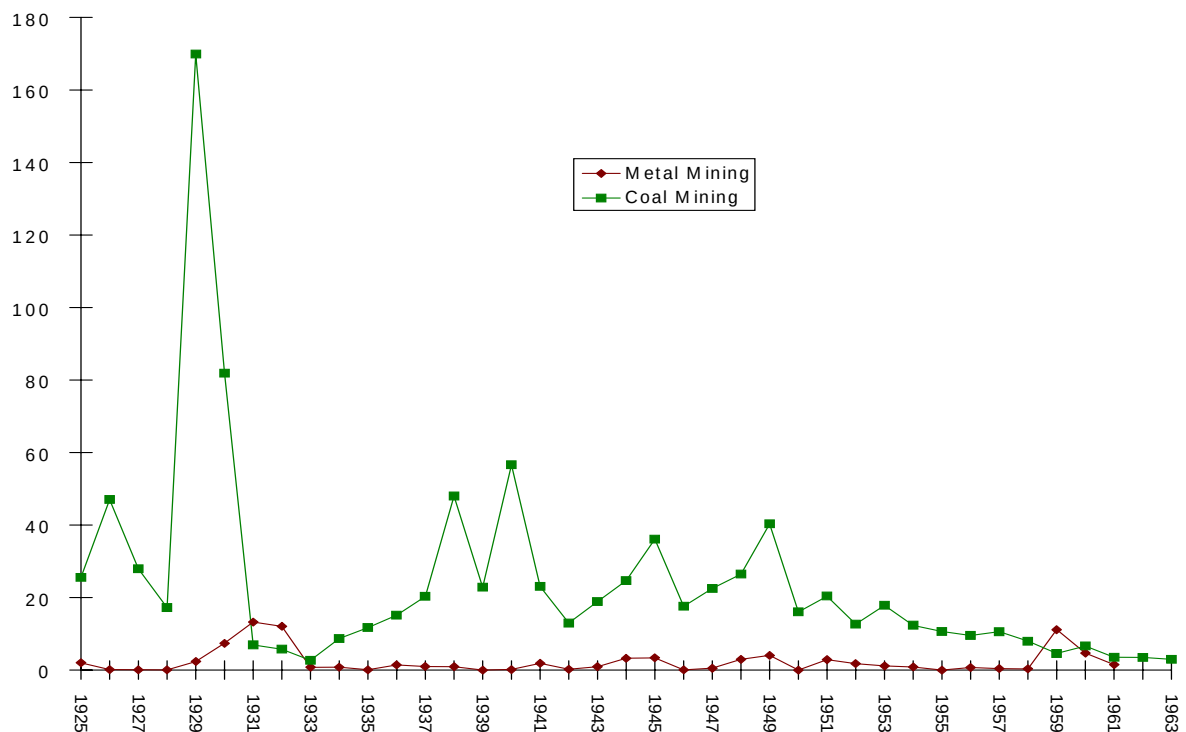
91 Tsokhas (1986), 172, 180, 196-7.

92 For comparative strike data on average duration and worker involvement in metal and coal mining, see Oxnam, D.W. (1966), 'The Incidence of Strikes in Australia', in Isaac, J.E. and Ford, G.W. (eds.), *Australian Labour Relations. Readings*, Sun Books, Melbourne, 34-6; Walker (1970), 182.

93 Walker (1970), 235.

... the very high earnings derived from the lead bonus over a considerable period have been important in providing a basis of contentment among mine employees. By ensuring that the extra profits made when lead prices rise are shared to some extent through an automatic rise in earnings, the lead bonus no doubt went far to reconcile the unions to three-year agreements and removed the basis for the ceaseless campaign for better earnings and conditions than they might otherwise have waged. The provision for the suspension of the lead bonus during stoppages strengthens its influence towards continuous working.⁹⁴

FIGURE 4
TIME LOST THROUGH STRIKE ACTIVITY
IN NSW METAL AND COAL MINING INDUSTRIES, 1925-63
(PERSON DAYS LOST PER PERSON EMPLOYED)



Source: Walker (1970), 182.

Developments during this third period, then, support the contention that the causal correlation between bonus levels and productivity was negative rather than positive. Declining bonus payments were associated unequivocally with rising tonnages per employee. We also have further evidence that management's continued adherence to the bonus system was motivated less by micro-economic considerations than by its perceived value as a break on major industrial disruption; in short, by the objective of workforce control rather than cost reduction.

1963-72

During this period, metal prices and bonus payments trended upwards, albeit erratically, and the unions once more regained the bargaining edge. The contract earnings data

⁹⁴ Walker (1970), 235.

indicates a growth in output-based earnings substantially above that of productivity (see Figure 1B). This, in turn, is suggestive of a renewed upward movement in contract rates.

Productivity remained at historically high levels but the growth phase which had characterised the previous period came to an abrupt end, with tonnages per employee actually falling away during the first half of the decade. Management responded to the reimposition of go-slow tactics by periodically suspending lead bonus payments. By the mid-1960s, however, union resistance to work study methods was such that management was forced to abandon its most inflammatory manifestations - the use of work study officers and the stop watch.⁹⁵ The WIUA rule of two men per drill remained firmly in place.⁹⁶ With market demand and prices rising, the companies were also reluctant to impose further rationalisation for fear of provoking a prolonged dispute. Mine management was also divided on the need for further labour cost reduction.⁹⁷ It was against this backdrop that the Barrier's oldest remaining and least efficient mine, the South mine, ceased operations permanently in 1972, its leases being bought out by industry newcomer, Mineral, Mining and Metallurgy Ltd.⁹⁸

Overall, the evidence for this period is too inconclusive to prove any causal connection between bonus levels and productivity movements, whether positive or negative. As Figure 2, above, indicates, there were inverse movements in 1963-4 and 1971-2, but also an unprecedented period of congruent movement in 1964-71. This points to a partial breakdown in the pattern of divergence evident in the two preceding periods. The potential for a negative linkage flowing from income substitution would certainly have diminished under the influence of the high commodity price inflation which characterised the second half of the 1960s.⁹⁹

1972-83

Whilst developments during this period continued many of the trends evident in preceding periods, in two key respects this decade brought a marked departure from earlier developments. For the first time, there were net intra-period increases in all three key indicators - money bonus levels, mine productivity and contract earnings (see table 2, above). However, the period also brought a second point of departure from past experience: the seemingly paradoxical situation of high real wages growth in the context of a steady erosion of union influence and a corresponding growth in management power.

Bonus payments rose to unprecedented heights in the later 1970s under the influence of booming metal prices, then fell away sharply during the recession of the early 1980s. As Figure 1B indicates, though, the bonus was still at an historically high level at the period's close. As the same chart also reveals, productivity continued to rise steadily throughout. Whilst data on contract earnings is available only for the closing years of the period, the exponential growth curve evident in Figures 1B and Figure 3 suggests a growth in contract earnings far in excess of both productivity improvement and price inflation which, in turn, points to a sustained rise in contract rates. The fall-off in bonus levels after 1980, in the context of an inflationary spiral, would have intensified even

⁹⁵ Tsokhas (1986), 193.

⁹⁶ Carroll (1986), 128.

⁹⁷ Tsokhas (1986), 177-8.

⁹⁸ Carroll (1986), 139-45; Solomon (1988), 98.

⁹⁹ See Figure 3, above.

further the pressure for rate increases. Clearly, contract miners benefitted from a dramatic increase in real income during this period.

Yet these impressive wage gains came at considerable cost to many mine employees. As before, productivity improvement was driven primarily by changes in underground technology. This time, though, the changes were more far-reaching than anything that had gone before. The introduction of 'longhole' stoping at the two Conzinc Riotinto mines in the early 1970s began a process which revolutionised underground methods. Ore extraction was no longer dominated by dozens of small contract parties using two-man drills and small ore skips but by larger work groups operating trackless drilling rigs, electric scrapers, diesel powered loaders and trucks and underground locomotives.¹⁰⁰ The transformation produced the first sustained upswing in mine productivity since the 1950s and a steady decline in workforce size. In the decade to 1983, almost 1,000 jobs were shed from the line of lode. These changes encountered surprisingly little opposition from either the unions or traditional stope miners. This may have been because much of the labour shedding was achieved by way of the voluntary redundancy of older workers - those who had entered the industry during the heyday of union power and jobs growth between 1945 and 1952 - whilst work in the longholes was confined to volunteers and new entrants. Perhaps it was also because management was not yet prepared to capitalise on the new production methods to overturn existing shift-work and pay practices. Like traditional stope men, longhole miners were grouped in small parties for performance pay purposes.¹⁰¹ Yet the advent of longhole mining undoubtedly contributed to a permanent weakening of union influence at the point of production. It also set the stage for both a successful offensive by Conzinc Riotinto in 1986 against shift-work practices which the WIUA had defended for generations and the final collapse of the industry's 61 year old system of round-table bargaining.¹⁰²

In sum, the outcomes for this period suggest a significant weakening of the earlier negative linkage between productivity and bonus levels. In contrast to developments in the later 1940s, there is little to indicate that rapidly rising bonus earnings during the late 1970s served to inhibit productive efficiency. The unprecedented inflation which characterised this decade¹⁰³ seems to have overridden any possibility of a negative linkage derived from income substitution. There are even signs of a positive short-term correlation between 1974 and 1980 (see Figure 1B). Again, though, the real engine of productivity growth was technological change, rather than incentive pay.

Weighing Up the Lead Bonus

As a system of price-linked variable pay, there can be no doubt that the lead bonus effectively cushioned company labour costs and profits during periods of declining and depressed market demand and prices. As a mode of performance pay, however, the lead bonus must be judged a near total failure. The quantitative evidence for the first three periods (1925-63) and, to a lesser extent, the fourth (1963-72) indicates a negative association between bonus payments and productivity trends. A steep rise in bonus levels in the later 1940s and early 1950s, coupled with a growing employee perception that such payments were an entitlement rather than a contingent reward, encouraged a

¹⁰⁰ Howard (1992), 727; Tsokhas (1986), 198.

¹⁰¹ Howard (1992), 727-8.

¹⁰² Howard (1992), 727-33; Flynn, B.(1988), 'Trade Unions and the Law: The Broken Hill Dispute', *The Journal of Industrial Relations*, 30(1), 32-53.

¹⁰³ See Figure 3, above

substitution of bonus income for contract earnings and a consequent decline in underground productivity. The prevailing high level of bonus payments undermined the capacity of the contract system to drive productivity upwards. If anything, it was the subsequent fall in bonus payments during the recessed later 1950s and early 1960s which reversed this process and drove productivity upwards. In this respect, the bonus suffered from two frequently cited generic weaknesses of profit-sharing as a performance enhancement device. First, the linkage between employee effort and financial reward was neither direct nor clear. Second, the critical determinant of the reward level - product market price - was entirely beyond employees' control.¹⁰⁴ Moreover, from the mid-1930s on, the formulation of the bonus was effectively co-opted by the unions through the system of triennial negotiation, seriously constraining management prerogative over the reward determination.

It is true that the negative linkage was progressively weakened by accelerating consumer price inflation during the 1970s and early 1980s. The threat to real earnings posed by inflation forestalled any repeat of the income substitution which had characterised earlier periods of high bonus growth. There are even signs of a positive linkage during the inflationary late 1960s and late 1970s. In this sense, it was price inflation rather than the bonus which provided the spur to increased employee performance.

If bonus payments can be said to have correlated positively with productivity during these decades, then the linkage was neither synchronous nor driven by employee motivation *per se*. Rather, the productivity impact was subject to a five to ten year time-lag and induced by major rounds of productive reorganisation and retrenchment brought on by mine management. The technical innovation and restructuring of the latter halves of the 1950s and 1970s were, in large part, calculated management responses to increases in unit labour costs during the decades immediately prior. As we have seen, these increases were predominantly bonus-driven.

Yet, the very fact of the bonus's survival suggests that productivity enhancement *per se* may not have been management's only, or even primary, objective in initiating and maintaining it. As we have seen, the abortive welfarist initiatives which preceded the bonus's introduction were informed by the desire to infuse the local mine workforce with a new sense of loyalty to town and company, as opposed to class. Arguably, the 1925 bonus initiative represented an extension and refinement of this paternalistic agenda. Its origins are attributable primarily to a perceived need to combat union militancy and industrial unrest by more sophisticated means than those previously used. Moreover, the qualitative evidence indicates that management's continued adherence to the bonus system was motivated less by micro-economic considerations than by its perceived value as a brake on major industrial disruption. As we have seen, in terms of person days lost per employee and overall employee involvement, the metal miners of Broken Hill were far less strike-prone than their brothers on the coalfields.

In this sense, and compared to the total value of output from the Broken Hill mines - some \$3.8 billion down to 1983¹⁰⁵ - perhaps the \$300 million, or 10 per cent, outlaid in bonus form by the mining companies is best seen as a successful and relatively inexpensive investment in industrial peace, continuity of production and workforce

¹⁰⁴ For a brief discussion of the perceived generic weaknesses of profit-sharing as a mode of performance pay, see Lawler (1990), 123-26.

¹⁰⁵ Department of Mineral Resources, 1982-3, 47.

control, rather than as a failed attempt at performance enhancement. After all, the companies, too, seem to have been more than a little 'lead bonus happy'.

APPENDIX

PAY, PRODUCTIVITY AND EMPLOYMENT IN THE BROKEN HILL MINING INDUSTRY, 1925-1983

Year	Lead bonus weekly (annual average for full time employment)		Contract miners' full-time average weekly earnings (excluding lead bonus, war loading and holiday loading) ¹	Lead bonus as a proportion of contract miners' total bonus and contract earnings (per cent)	Total mine employment (underground & surface; annual average)	Ore raised per employee (annual average) (tons)
1925	10s.	6d.	165s.	6.0	5601	226
1926	2s	3d.	180s.	1.2	5703	227
1927		0	173s.	0	5611	249
1928		0	170s.	0	4434	261
1929		0	175s.	0	4738	259
1930		0	161s.	0	4301	304
1931		0	142s.	0	2576	339
1932		0	145s.	0	3088	355
1933		0	152s.	0	3152	381
1934		0	161s.	0	3272	383
1935	3s.	2d.	156s.	1.9	3380	386
1936	14s.	7d.	157s.	8.5	4057	334
1937	32s.	8d.	178s.	15.5	4945	297
1938	9s.	7d.	180s.	5.1	5232	302
1939	8s.	11d.	185s.	4.6	4651	306
1940	15s.	2d.	181s.	7.7	4057	352
1941	17s.	1d.	190s.	8.3	3988	368
1942	21s.	5d.	193s.	9.9	3726	356
1943	26s.	5d.	213s.	11.0	3587	327
1944	32s.	11d.	201s.	14.1	3501	333
1945	43s.	6d.	226s.	16.1	3525	302
1946	74s.	4d.	223s.	24.9	4372	258
1947	150s.	10d.	229s.	39.7	4979	219
1948	183s.	11d.	244s.	43.0	5619	220
1949	205s.	10d.	261s.	44.1	5861	214
1950	195s.	10d.	286s.	40.6	6044	205
1951	324s.	4d.	334s.	49.2	6290	200
1952	309s.	4d.	379s.	44.9	6459	204
1953	228s.	9d.	437s.	34.3	6364	259
1954	242s.	3d.	475s.	33.8	6062	302
1955	278s.	9d.	490s.	36.2	6006	319
1956	303s.	9d.	519s.	36.9	5943	347
1957	269s.	3d.	553s.	32.7	5881	379
1958	181s.	10d.	548s.	24.9	5538	343
1959	181s.	5d.	589s.	23.5	4947	379
1960	185s.	5d.	622s.	22.9	4756	420
1961	163s.	9d.	639s.	20.4	4872	388
1962	131s.	3d.	672s.	16.3	4332	514
1963	144s.	2d.	703s.	17.0	4141	594
1964	225s.	5d.	731s.	23.6	4239	557
1965	312s.	8d.	759s.	29.2	4353	572
1966	\$26.21		\$80.25	24.6	4515	544
1967	\$21.44		\$85.40	20.1	4962	516
1968	\$21.56		\$91.60	19.1	4894	485
1969-70	\$29.27		\$96.50	23.3	4615	598
1970-1	\$26.27		\$102.00	20.5	4637	535
1971-2	\$22.94		\$112.75	19.4	4843	563
1972-3	\$26.10		-	-	4414	552
1973-4	\$37.56		-	-	4276	473
1974-5	\$42.83		-	-	4197	629
1975-6	\$29.15		-	-	4080	571
1976-7	\$49.21		-	-	3916	636
1977-8	\$60.35		-	-	3912	658
1978-9	\$78.40		-	-	3968	676
1979-80	\$125.79		\$259.35	32.7	4006	678
1980-1	\$77.54		\$278.55	21.8	3825	644
1981-2	\$67.85		\$320.00	17.5	3988	737
1982-3	\$55.85		\$350.00	13.8	3629	778

1. Earnings figures for 1925-72 cover all major mines in operation; those for 1979-1983 cover the Zinc Corporation and New Broken Hill Consolidated. Comparable earnings data unavailable for period 1973 to 1978. Sources as for Table 3.

REFERENCES

Baddon, L. et. al. (1989), *People's Capitalism? A Critical Analysis of Profit-sharing and Employee Share Ownership*, Routledge, London.

Blainey, G. (1968), *The Rise of Broken Hill*, Macmillan, Melbourne.

Broken Hill Mining Managers' Association, 'Underground Contractors' Earnings' (unpublished summaries), 1967-8 to 1971-2.

Broken Hill South Ltd. Collection, Melbourne University Archives.

Carroll, B. (1986), *Built on Silver. A History of Broken Hill South*, Hill of Content, Melbourne.

Cochrane, P. (1980), *Industrialization and Dependence. Australia's Road to Economic Development*, University of Queensland Press, St. Lucia.

Church, R.A. (1971), 'Profit-sharing and Labour Relations in England in the Nineteenth Century', *International Review of Social History*, 16 (1), 1-16.

Cubbon, H.A., Gardner, G.J., Oeser, O.A., and Trahair, R.C.S. (1966), *Work and Negotiation in the Broken Hill Mining Industry*, Department of Psychology, University of Melbourne.

Department of Mineral Resources, New South Wales, *Statistical Supplement to Report*, 1968-9 to 1982-3.

Flynn, B.(1988), 'Trade Unions and the Law: The Broken Hill Dispute', *The Journal of Industrial Relations*, 30(1), 32-53

Fraser, Sir Colin, Papers, Broken Hill Associated Smelters Collection, Melbourne University Archives.

Fry, E.C. (1956), 'Outwork in the 'Eighties. An Examination of Outwork in the Infant Industries of the Eastern Australian Colonies c.1889-90', *University Studies in History and Economics*, 2 (4), 77-93.

Hagan, J. and Fisher, C. (1973), 'Piece-work and Some of its Consequences in the Printing and Coal Mining Industries in Australia 1850-1930', *Labour History*, 25, 19-39.

Hammond, B. (1970), "'The Spuds and Onions Strike": The Origins and Course of the Broken Hill Strike 1919-20', B.A. (Hons) Thesis, School of History, Melbourne University.

Holloway, E.J. (1963), 'Idea the Transformed Broken Hill', *The Age*, 20 March 1963.

Howard, W. A. (1990), *Barrier Bulwark: The Life and Times of Shorty O'Neil*, Willry, Kew, Victoria.

- Howard, W.A. (1992), 'The Rise and Decline of the Broken Hill Industrial Relations System', in K. Tenfelde (ed.), *Towards a Social History of Mining in the 19th and 20th Centuries*, C.H. Beck, Munich, 715-36.
- Kennedy, B. (1978), *Silver, Sin and Sixpenny Ale: A Social History of Broken Hill, 1883-1921*, Melbourne University Press, Carlton.
- Kennedy, B. (1981), 'Gepp, Sir Herbert William', in Nairn, B. and Serle, G. (eds), *Australian Dictionary of Biography*, vol. 8, Melbourne University Press.
- Kennedy, B. (1984), *A Tale of Two Cities. Johannesburg and Broken Hill, 1885-1925*, Melbourne University Press, Melbourne.
- Kennedy, B. (1986), 'Mussen, Sir Gerald', in Nairn, B. and Serle, G. (eds.), *Australian Dictionary of Biography*, vol.10, Melbourne University Press, Melbourne.
- Kennett, J. (1981), 'Fraser, Sir Colin', in Nairn, B. and Serle, G. (eds), *Australian Dictionary of Biography*, vol. 8, Melbourne University Press, Melbourne.
- Lawler, E.E., 1990, *Strategic Pay. Aligning Organizational Strategies and Pay Systems*, Jossey-Bass, San Francisco.
- Maughan, B. (1947), 'Review of Industrial Negotiations 1920-1946', Typescript, Charles Rasp Memorial Library, Broken Hill.
- Mauldon, F.R.E. (1931), 'Cooperation and Welfare in Industry', *The Annals of the American Academy of Political and Social Science*, November 1931, 183-192.
- McLeod, A. (1992), 'Arnold Black and Hydraulic Fill', Mineral Heritage Oration, The Australian Institute of Mining and Metallurgy Annual Conference, Broken Hill, 17-21 May 1992, The Australian Institute of Mining and Metallurgy, Melbourne.
- Mitchell, D.J.B., Lewin, D., and Lawler, E.E. (1990), 'Alternative Pay Systems, Firm Performance, and Productivity', in Blinder, A.S. (ed.), *Paying For Productivity. A Look at the Evidence*, Brookings Institute, Washington D.C., 15-94.
- North Broken Hill Ltd. Collection, Melbourne University Archives.
- Oxnam, D.W. (1966), 'The Incidence of Strikes in Australia', in Isaac, J.E. and Ford, G.W. (eds.), *Australian Labour Relations. Readings*, Sun Books, Melbourne.
- Park, J. (1987), *Profit-sharing and Industrial Co-partnership in British Industry, 1880-1920*, Garland Publishing, New York.
- Patmore, G. (1994), "'American Hustling Methods" - the Lithgow Small Arms Factory 1912-1922', *Labour History*, no.67, 42-56.
- Poynter, J.R. (1979), 'Baillieu, William Lawrence', in Nairn, B. and Serle, G. (eds.), *Australian Dictionary of Biography*, vol.7, Melbourne University Press, Melbourne.
- Richardson, P. (1987), 'The Origins and Development of the Collins House Group, 1915-1951', *Australian Economic History Review*, 27(1), 3-29.

Robertson, G. (1983), 'Industrial History', *Barrier Daily Barrier Daily Truth*, Centenary Souvenir Edition, Broken Hill.

Robinson, W.S., Papers, Melbourne University Archives.

Robinson, W.S. (1967), *If I Remember Rightly*, Cheshire, Melbourne.

Scott, W.D. (1950), 'Incentive Payment Schemes Operating in Australia', in *Incentive Payments in Industry*, Economic Papers No.9, Economic Society of Australia and New Zealand (New South Wales Branch), Sydney, 6-21.

Solomon, R.J. (1988), *The Richest Lode. Broken Hill 1883-1988*, Hale and Iremonger, Sydney.

Trengove, A. (1975), '*What's Good for Australia ...!*' *The Story of BHP*, Cassell Australia, Sydney.

Tsokhas, K. (1986), *Beyond Dependence: Companies, Labour Processes and Australian Mining*, Oxford University Press, Melbourne.

Vamplew, W. (ed.) (1987), *Australians. Historical Statistics*, Fairfax, Syme and Weldon Associates, Sydney.

Walker, K. (1970), *Australian Industrial Relations Systems*, Harvard University Press, Cambridge (first published 1956).

Woodward, O.H. (1965), *A Review of the Broken Hill Lead-Silver-Zinc Industry*, 2nd edn., West Publishing Corp., Sydney.

Wright, C. (1993), 'Taylorism Reconsidered: The Impact of Scientific Management within the Australian Workplace', *Labour History*, 64, 34-53

Wright, C. (1994), 'A History of Incentive Payment Systems in Australia' in Wright, C. (ed.), *Incentive Payment Systems in Australia*, Department of Industrial Relations, Canberra, 3-24.

Wright, C. (1995), *The Management of Labour: A History of Australian Employers*, Oxford University Press, Melbourne.