

# EMPLOYMENT, WAGE AND MONETARY POLICY LINKAGES

The following article, prepared by Arthur Grimes, was presented as part of the Government's briefing for the July 1988 Tripartite Wage Conference.<sup>1</sup>

## Introduction

Previous work conducted within the Reserve Bank has examined the links between employment and real wages. This article updates this work and relates the findings to the current monetary policy stance. In summary, an earlier finding that there has been a strong relationship between the levels of employment and real wages in New Zealand is also confirmed to hold for the recent past. In interpreting this result, however, it is important to distinguish between the real wage as a cost to the employer (henceforth termed the 'product wage') and the real after-tax wage received by the employee. It is the former that is relevant to the employment decision.

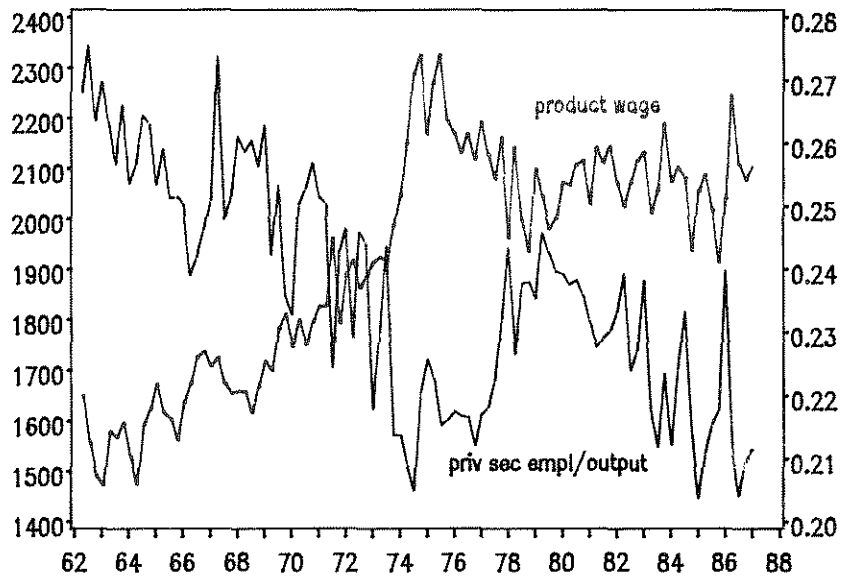
## Wage and Employment Trends

Before examining the statistical relationship between wages and employment, it is informative to observe the trends in the relevant variables. Figure 1 graphs the private sector employment/output ratio together with the product wage.<sup>2</sup> Excluding the real wage influence, one would expect the employment/output ratio to remain reasonably steady over time except for a slight downward trend as a result of productivity gains due to technological improvements. This trend in employment/output is apparent from Figure 1. What the figure also suggests is that there is a

In order to avoid confusion, it should be made clear that this article primarily examines the link between wages and employment. It does not attempt to examine other influences on employment and unemployment, many of which will also be of major importance. For instance, some of the recent increase in unemployment can be attributed to structural changes arising from factors such as changes in protection policy and from measures designed to improve the efficiency of the state sector. A complete explanation of current unemployment would have to examine both these structural factors and the impact of wages on employment.

The employment/output ratio is given by EP/QP, while the product wage is given by WP/PFC; all variables are defined in the Data Appendix. All graphs are seasonally adjusted.

Figure 1  
Employment/Output Ratio and the Real Product Wage



negative relationship between employment/output and the product wage. This is particularly noticeable in the mid-1970s and since 1986. The statistical findings later in the paper reveal that this observed inverse relationship has indeed been a significant factor in determining employment over the period 1963-1987.

Product wages remain close to their peak level of the mid-1970s, but this is not the appropriate variable for measuring living standards. A more appropriate variable for this purpose is real after-tax wages, as shown in Figure 2.<sup>3</sup> The two wage measures differ in two important respects.

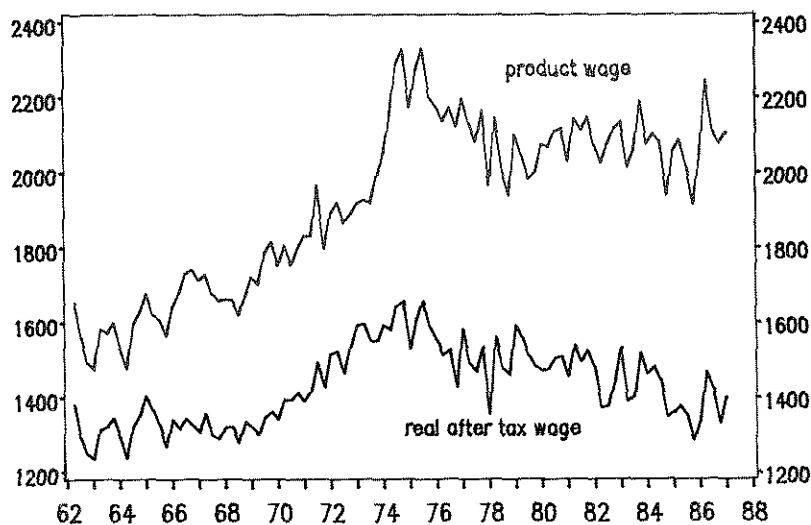
Firstly, product wages are measured before tax, so representing gross wage payments by the employer. In terms of the firm's employment decision, it makes no difference what proportion of gross wages is paid in tax since the cost to the employer is identical no matter how much of the wage goes to the employee and how much goes to Government.

The second major difference between the two wage measures is the price index that is relevant. Employers are concerned with labour costs relative to the price that they receive for their own output. Hence the price deflator to be used needs to represent the price of domestic output, net of indirect taxes (which are received by Government and not by firms). For this reason, the Gross Domestic Product (GDP) deflator at factor cost is used to calculate the product wage in this study as this measures the price of all domestic output net of indirect taxes and subsidies.<sup>4</sup> To measure after-tax real wages to the employee, on the other hand, the relevant price deflator is one that measures the cost of consumption. For this reason, the Consumers Price Index (CPI) is used to measure after-tax real wages, although it should be noted that the CPI is *not* a price index of consumption, but is instead a price index of personal expenditure and so is not entirely appropriate for this

<sup>3</sup> Real after-tax wages are given by  $WPx(1-TRYS)/CPI$ .

<sup>4</sup> The Producers Price Outputs Index could also be used, although it is not used here because the data is only available since the late 1970s. Over this period, however, the PPI Outputs Index moved similarly to the GDP deflator.

**Figure 2**  
**Real wages faced by employers and employees**



purpose. (The major shortcoming of the CPI in this respect is that, in measuring housing costs, both the purchase and debt servicing costs of housing are included whereas it would be more appropriate, in a price index for consumption, to include a measure of the cost of consuming housing services.<sup>5</sup>)

The two wage measures may therefore diverge if the two price deflators diverge or if income tax rates change over time. Both factors have been important in New Zealand over the past two decades. Average income tax rates increased steadily from the early 1960s until recent years. For instance in 1962 the average proportion of wage and salary incomes paid in income tax was 12 per cent while this had risen to 29 per cent in 1986. In the year to March 1988 this proportion had fallen to approximately 25 per cent. The New Zealand evidence<sup>6</sup> suggests that much of the increase in tax rates has been reflected in higher wages in order to insulate real after-tax wages, but this has had the effect of increasing product wages since

employers face a rising wage bill with no compensating increase in output prices.

A divergence between the two relevant price deflators has also been an important factor in causing a divergence between product wages and real after-tax wages. The sustained terms of trade fall suffered by New Zealand from the mid-1970s caused the CPI to rise relative to the GDP deflator since the CPI includes some imported items which are not included in the GDP deflator as they are not part of domestic production. Conversely, the GDP deflator includes a large weight on the price of export production, while this carries only a small weight in the domestic CPI. By definition, the terms of trade decline meant that import prices rose relative to export prices with the result that the CPI rose relative to the GDP deflator.

Two other factors also contributed to this divergence. The CPI has reacted strongly over the past three years to higher interest rates and house prices, neither of which are reflected in prices received by firms for their output. In addition, the introduction of GST in 1986 caused an increase of approximately 7 per cent

in the CPI whereas again the price received by firms did not increase as a result of this factor. In essence, the rise in GST has a similar impact as a rise in income tax on the relationship between product wages and real after-tax wages. In both cases, a rise in the tax is seen to be a cost to the employee but is not of direct benefit to the firm. Instead, the tax increase is used to pay for increased Government expenditure. To the extent that wage claims take this increased Government expenditure, especially on consumption goods (such as health and education), into account there will be no need for wages to rise in response to the tax increase. If, however, wages do not take the expenditure increases into account, and instead rise in response to the tax, product wages will rise following an increase in either direct or indirect tax.

The combination of these price and tax factors has resulted in a wedge being formed between real after-tax wages and product wages, as shown in Figure 3.<sup>7</sup> This figure demonstrates that the ratio of product wages to real after-tax wages has increased by approximately one-third over the past twenty-five years reflecting, in particular, the income tax, GST and terms of trade effects. It is this wedge that has been the fundamental factor behind the increasingly difficult task of achieving wage rates that are consistent with full employment while at the same time ensuring adequate living standards.

### The Wage-Employment Relationship

Previous work<sup>8</sup> showed that during the period from 1962 to 1979, a 1 per cent increase in output led to an approximate 1 per cent increase in employment, while a 1 per cent increase in product wages decreased

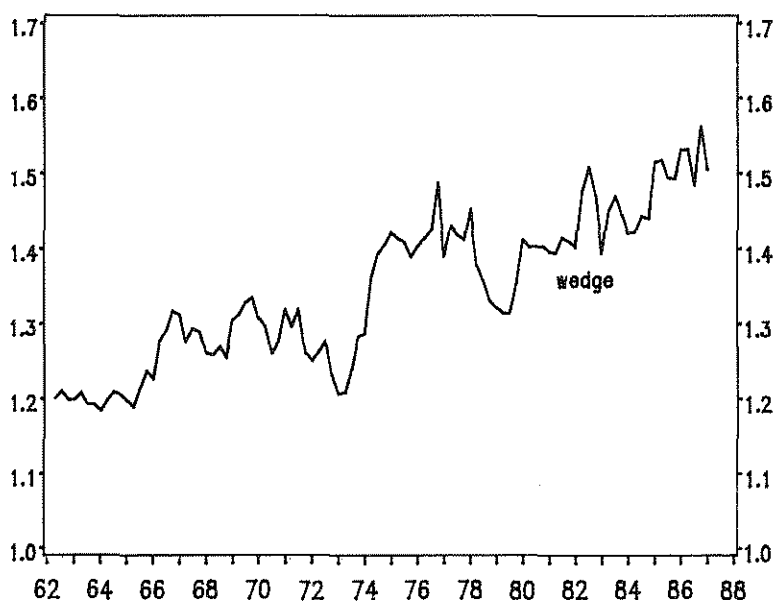
<sup>5</sup> See Bascand (1988) for further discussion of this matter.

<sup>6</sup> See Grimes (1982) for details.

<sup>7</sup> The wedge is calculated by taking the ratio of product wages to real after-tax wages to give the formula: WEDGE =  $CPI / ((1 - TRYS) \times PFC)$ .

<sup>8</sup> See Grimes (1983).

**Figure 3**  
**Ratio of Product Wage to Real after Tax Wage**



employment by approximately 0.6 per cent. Recent statistical work has updated these estimates to cover the period from the first quarter of 1963 to the first quarter of 1987 (the most recent period for which reliable data exists).<sup>9</sup>

Over the full period, the results show that the effect of output on employment appears unchanged, but that the effect of a 1 per cent rise in product wages, holding other factors constant, is to decrease employment by between 0.75 per cent and 0.9 per cent. Notably, when the relationship is estimated over the more recent period of first quarter 1978 to first quarter 1987, almost exactly the same long-term relationship is shown to hold. The only substantive difference between the results for the recent period and for the full period is that firms now adjust employment to product wage changes faster than was previously the case. The recent results suggest that a 1 per cent increase in product wages is reflected in an approximate 0.6 per cent decline in employment

within one year and an approximate 0.8 per cent decline within two years.

This relationship between product wages and employment represents only the first round effect of a wage change on employment. The overall effect may in fact be magnified if a wage rise not only causes the employment/output ratio to fall but also causes a fall in output, as production becomes less profitable. On the other hand, the wage increase may lead to increased expenditure by wage earners so leading to an increase in domestic output. The overall influence of these second round effects has been examined in an economy-wide simulation of the effects of a change in product wages [see Grimes (1981)]. In this study, it was found that the various effects more or less offset each other so that there were only minor output consequences resulting from the wage change. Hence the first round effects appear to provide a reasonable approximation of the full wage-employment relationship.

The reported results represent the average effect of product wage

changes on employment across the whole private sector and so cannot be taken to give a precise guide as to employment consequences of a wage rise in any particular sector. It is likely that the responsiveness in some sectors will be higher, and in others lower, than this average effect. Nevertheless the results do suggest that, within each sector, the employment consequences of wage decisions must be taken heed of.

It is also important to note that the results reported here relate to the relationship between product wages and employment, not unemployment. Employment changes are only one cause of unemployment changes; labour supply changes have been at least as important. If it is intended to reduce unemployment, especially at a time when the labour force is growing, it is important that wages are determined not only to maintain a given employment level but also to allow for an increase in employment. This suggests, on average, that some fall in product wages is appropriate if the unemployment rate is to be reduced. One of the issues here is a distributive one — there is a choice between maintaining a certain level of product wages for those who are employed while at the same time having approximately 6 per cent of the labour force unemployed, or of reducing the level of product wages while also reducing the number of those who are unemployed. To the extent that those who are unemployed are financially disadvantaged compared with employed workers, the latter option can be considered the more equitable.

### Wage Rises and Monetary Policy

The Reserve Bank and the Minister of Finance have both stated that monetary policy is being targeted at achieving price stability by the early 1990s. Inflation is falling sharply and is expected to be at or below 5 per cent within a year, falling further

<sup>9</sup> A Statistical Appendix detailing the econometric results is available from the Economic Department of the Reserve Bank.

thereafter. One of the problems of implementing a tight monetary policy after two decades of inconsistent and often inflationary policies, is a degree of scepticism on the part of the public. Price and wage setters have tended to discount the authorities' resolve to continue with the stated policy and have made price and wage decisions that have turned out to be inconsistent with the continuing tight monetary policy. One result of monetary policy not accommodating the high price and wage rises of recent years has been a decline in real expenditures, output and employment.

Given this experience, it should now be clear that the stated monetary policy strategy will be adhered to. Many firms have now realised this and no longer expect to raise prices over coming months. (Only a net 3 per cent of firms surveyed by the NZIER expected to raise their prices in the June quarter.<sup>10</sup>) The im-

plication of this environment for wage setting is that there is little room for sector-specific wage rises to exceed real productivity gains in each sector if employment levels are to be maintained. Further, if unemployment is to be reduced, wages would need to rise by less than real productivity gains.

These implications are backed up by recent discussions that Reserve Bank officials have had with a number of different sized businesses throughout the country. A common intention of many of the businesses is to maintain their total wage bill constant no matter what the increase in wage rates over the coming year. This strategy means, for these firms, that any percentage wage increase will result in a reduction in employment by the same percentage. Since many of these firms are constrained by foreign competition not to increase their prices, this reaction is an illustration of the statistical findings that suggest employment will, on average, fall by almost

the same percentage as product wages rise.

## Conclusion

In an environment where monetary policy is being kept tight and where inflation is continuing to fall rapidly, the implications for employment of any wage increases must be carefully considered. Recent statistical work suggests that a 1 per cent rise in product wages is likely to induce a contraction in employment of up to 0.9 per cent. With the existing high levels of unemployment, and given that the unemployed constitute the group that is most severely affected by the economic downturn, it would appear desirable that wages be set this year primarily with a view to maintaining and increasing employment opportunities. Given this objective, the economic climate is such that there can be little room for wage rises in any industry to exceed sector specific growth in real productivity.

<sup>10</sup> See NZIER (1988) for details.

## DATA APPENDIX

All data are obtained from the Reserve Bank's econometric model database. The definitions of the data are as follows:

CPI	Consumer price index – all groups
EP	Full-time non-government employment
PFC	GDP deflator at factor cost
PW	Product wage (= WP/PFC)
QP	Real private sector output
TRYS	Effective income tax rate on salary and wage earners
WP	Wage payments per private sector employee

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