

Inflation in Australia*

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This paper presents a formal model of the inflationary mechanism in Australia and discusses Australia's experience of inflation in the nineteen seventies in the light of that model. However, Australia has a unique method of wage fixation which has a strong influence on the rate of inflation. Hence it is necessary to begin by describing the way in which wage rates are determined in Australia.

The vast majority of workers in Australia have the minimum wage that can be legally paid for their particular job fixed by an award. Awards do not merely fix the overall minimum wage that can be paid to anyone. They are not the same as the legal minimum wage in the United States for example. They do fix a general minimum wage that can be paid to any adult covered by an award with a separate one for juniors. But they also determine separate different minimum wages that can be paid to each of hundreds of different types of skilled workers and in hundreds of different occupations. There is an award for builders' labourers, there is also one for commercial airline pilots, or rather there are several, one for each category of skill and experience within each group, e. g. there is one for a second officer on a thirty seat passenger plane right up to one for the captain of a jumbo jet. Award wage rates are set by the Australian Commonwealth Conciliation and Arbitration Commission and by state arbitration bodies. However, the Australian federal one is the important body. The various state arbitration bodies are not bound in law to take any notice of the Australian body, but in fact they follow very closely the policies of the Australian Conciliation and Arbitration Commission and the precedents set by that body. The Conciliation Commission is a completely independent body like a court. Its senior members are appointed for life, and have the status of judges. Unions and employers' associations

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and the Australian and state governments present evidence before it and give arguments about what the level of award wages should be. The Commission then decides, and fixes award wages. Employers can pay more than award wages, they can not pay less. Many private employers do make over-award payments, most government employers do not. Of course, once an employer has been making an over-award payment for some time it is difficult in practice, though not in law, for him to reduce that payment. At present the Conciliation and Arbitration Commission has a hearing every six months to decide how much award wage rates should be adjusted for inflation. It has separate hearings once a year to decide if they should be changed for any other reason. At the moment on average it is giving about 80 per cent general indexation for inflation and other increases are only being given to specific groups of workers for particular reasons. There has been no general increase for productivity reasons for three years. Award wage rates are so all-embracing in Australia that they are central to any analysis of inflation in Australia.

A few economists, mainly overseas visitors, have argued that the conciliation and arbitration authorities do not have any real effect but just follow what the market would determine in any case. However, the evidence is almost overwhelming that this view is wrong and that they do have an independent influence. They play a central role in my model of inflation in Australia.

My model is based on a fairly general theory of inflation but one that is definitely neo-Keynesian, rather than neo-classical. First, it is assumed that pricing decisions are based on costs at normal levels of output, and that, while the most common form of pricing is for firms to use some form of mark-up procedure, this does not exclude the possibility of discounting when demand is slack or of a firm adding to the mark up when faced with considerable excess demand.

Secondly, as far as wage determination or the pricing of labour is concerned, the theory recognizes the existence of unions. Unlike some theories which assume wages are fixed in competitive markets, the theory set out here assumes that unions have a large influence in determining earnings drift, - or the rate of growth of the gap between award wage rates and the wage rates actually paid. Furthermore it is assumed that unions are concerned with real wages as much as money wages. Hence the smaller the rate of growth of award rates compared with the expected rate of growth of prices the more they strive for increases in over-award payments. In addition the

greater the level of demand in general, and hence the greater the demand for labour and the lower the level of unemployment, the more aggressive are the unions. In time of high unemployment unions work more through the conciliation and arbitration system when seeking wage increases.

On the side of employers similar factors determine the strength with which wage increases are opposed. If the increase labour costs imposed by the Conciliation and Arbitration Commission are small compared with the expected rate of growth of prices, employers will be less strongly opposed to increases in over-award payments. In other words the strength of employers' resistance to increases in over-award payments will depend in part on how large is the rate of growth of award wage rates minus the rate of growth of productivity compared with the expected rate of growth of prices. Employers' attitudes to wage increases will also be influenced by the level of demand. Strikes are especially costly to a firm if they occur at times when there is a high level of demand which may not be permanent. Moreover, when demand is high, firms are probably less worried about the effects of putting up the price of their products, - even in relation to the general rise in prices that is expected to occur.

Thus the theory to be set out postulates a Phillips curve type relationship in which higher levels of demand, or lower levels of unemployment, lead to higher rates of inflation. However, this relationship is augmented by the effect of the expected rate of inflation on wages, and in particular by the difference between the expected rate of inflation and the rate of growth of award wage rates. Two further factors have to be added. So far we have been talking about price determination in Australia, but some prices for goods sold in Australia are determined overseas, and this must be taken into account. Secondly, so far we have been talking about prices net of indirect taxes. It is a reasonable assumption that if indirect tax rates are changed, these changes are passed on in price changes.

The theoretical model of inflation starts with the truism that a certain proportion of prices in Australia are determined in the first instance by overseas prices and the rest are determined, in the first instance, by domestic factors. In symbolic terms:

$$p = h\pi + (1-h)p_d \quad (1)$$

where p is the rate of growth of the general price level, π the rate of growth of overseas prices, and p_d the rate of growth of prices determined by domestic factors.

The equation for domestically determined prices is

$$p_d = w_{en} - q + aD \quad (2)$$

where w_{en} is the rate of growth of average weekly earnings net of changes in overtime earnings, q is the long-run rate of productivity growth and D is the level of demand.

Changes in weekly earnings net of changes in overtime earnings and the long-run rate of growth of productivity are used because of the belief that pricing decisions are made on the basis of costs at normal levels of output. Equation (2) implies that, abstracting from variations over the trade cycle, the share of profits in income is constant. While the share of profits in income may not be constant, there is evidence that *in the long run* it has not changed greatly, and little error is introduced by assuming it to be constant.

Changes in weekly earning net of changes in overtime earnings are determined by changes in award wage rates and the factors already mentioned which determine changes in overaward payments. Hence the equation for w_{en} is

$$w_{en} = bw_a + c(p^e - w_a + q) + dD, \quad (3)$$

where w_a is the rate of growth of award wage rates, and p^e is the expected rate of growth of prices. b may not equal unity. If all increases in award wage rates are passed on in percentage terms, b would be equal to one. If in some firms or industries the absolute amount of an increase in award wage is added on, b will be somewhat less than one.

Combining equations (1), (2) and (3) and adding an extra term to allow for the existence of indirect taxes gives:

$$p = h\pi + (1-h)(b-c)w_a + (1-h)cp^e - (1-h)(1-c)q + (1-h)(a+d)D + f\theta \quad (4)$$

where θ is the rate of change of an index of indirect taxes.

In the very short run w_a or the rate of growth of award wage rates is an exogenous variable. However, in any but the very short run, w_a is at least partly endogenous in that the conciliation and arbitration authorities act in a fairly predictable way and indeed, in a longer run, must take factors such as the rate of change of prices into account, if the conciliation and arbitration system is to remain viable. But it is also

1) See J. W. Neville and D. W. Stammer (eds.) *Inflation and Unemployment*, p. 193.

true that the conciliation and arbitration authorities can, and on occasion do, add exogenous shocks to the system by giving award wage rate increases that are unusually large or unusually small in relation to movements in the variables that normally seem to determine the size of increases in award wage rates. Clearly the most important endogenous component in award wage rates is the immediate past rate of price increase or perhaps the expected future rate of price increase. I believe that in Australia at present these two things are now much the same and it is probably best to think of award wage rates being determined by the equation

$$w_a = p^e + A, \quad (5)$$

where A is a (positive or negative) adjustment or loading determined by such things as the recognition of productivity increases, social goals such as equal pay for women, the goal of industrial peace and the desire to moderate inflation by awarding less than full indexation. A is considered to be exogenous. Equation (5) can be substituted into equation (4) but since p^e is already in equation (4) when one estimates it by regression analysis one obtains identical results, whether equation (5) is substituted into equation (4) or whether equation (4) is estimated as it stands. It is slightly more convenient to estimate it as it stands and that is what I did.

I estimated equation (4) by ordinary least squares regression using annual data for the period 1954-55 to 1977-78. The rate of inflation, p , was defined as the rate of change of the implicit gross national expenditure deflator. D , or the level of demand, was measured by $K - \frac{1}{u}$ where K is a constant and u the level of unemployment. π was measured by the import price index. q or the long run rate of growth of productivity, was assumed to be constant and its effects included in the constant term of the regression equation, and I constructed myself an index of indirect taxes in order to measure θ .²⁾ This leaves only p^e or the expected rate of growth of prices. In recent years the economics literature has abounded with sophisticated assumptions about how expectations are formed and with terms like adaptive expectations and rational expectations. Personally, I have a strong belief that usually little more than simple rules of thumb are used to measure expectations in the real world. For example, in the nineteen sixties, when the rate of inflation in Australia fluctuated between 0 and 4 per cent and

2) See J. W. Nevile, *Fiscal Policy in Australia: Theory and Practice*, 2nd edition, 1975, p. 112, for a description of how his index was constructed.

was usually between 2 and 3 per cent it is probable that most decisions were taken on the assumption that the future rate of inflation would equal the "normal" rate somewhere between 2 and 3 per cent. In the nineteen seventies this assumption became clearly untenable. Instead people probably looked at the rate of inflation in the recent past, and particularly at the rate of growth of the consumer price index which receives wide publicity in the media. Hence, the measure of p^* used was to set the expected rate of inflation at $2\frac{1}{2}$ per cent for the years prior to 1970-71 and to set it equal to the annual rate of growth of the consumer price index to the June quarter of the year just ended for the years 1970-71 to 1977-78.

One further complication must be added. The Labor Government, led by Mr. Whitlam, set up a Prices Justification Tribunal. The first year in which this was in full operation was 1974-75. One can argue that a Prices Justification Tribunal will have an effect on inflation when it is introduced, but that this will be a once and for all effect, not a permanent reduction in the rate of inflation. The operations of the Tribunal might have an effect in reducing profit margins in cases where they were judged to be excessive, but this could not be a continuing process. Similarly, if the introduction of the Tribunal had an effect on price expectations, this would only reduce the expected rate of inflation below that experienced in the recent past for a short period of time. After that the rate of inflation in the immediate past would be one for a period in which the Prices Justification Tribunal was operating. Accordingly, a dummy variable Q was used which had a value of one in 1974-75 and zero in all other years.

The estimated equation is:

$$p = -1.22 + .13\pi + .35w_a + .47p^* + .47p + .12\theta - 2.51Q + \frac{2.1}{u}$$

$$(2.6) \quad (2.6) \quad (9.4) \quad (6.5) \quad (3.3) \quad (1.9) \quad (3.5)$$

($R^2=.993$, $D.W.=2.3$, figures under coefficients are t statistics)

In general this equation is very satisfactory. The only coefficient which does not correspond to my prior beliefs about its size is that for overseas prices which I would have expected to be about .2 rather than .13. Perhaps the low value is because the import price index is not a very good measure of overseas prices.

Using this estimated equation we can look at the history of inflation in Australia over the last ten years. In the nineteen sixties inflation in Australia was never more

TABLE 1 *Inflation in Australia : 1968/69 to 1977/78*

Figures are for the annual rates of growth of the implicit G. N. E. deflator.

Year	Inflation Rate
1968 / 69	3.1%
1969 / 70	4.4%
1970 / 71	6.4%
1971 / 72	7.3%
1972 / 73	6.2%
1973 / 74	13.3%
1974 / 75	19.8%
1975 / 76	15.3%
1976 / 77	11.8%
1977 / 78	9.1%

than $3\frac{1}{2}$ per cent in any year until 1969-70 when it was 4.4 per cent. The inflation rate in each succeeding year is shown in Table 1. It can be seen from Table 1 that there were two periods in which the rate of inflation in Australia increased substantially. It more than doubled over the period 1968 / 69 to 1971 / 72, then after a small drop in 1972 / 73 the rate of inflation increased by approximately three times between 1972 / 73 and 1974 / 75. Since then the rate of inflation in Australia has declined steadily.

In each period of accelerating inflation, the rise in the rate of inflation was the result in part of policy mistakes by the government in power at the time. Unfortunately, from the point of view of price stability both Liberal-Country Party governments and Labor governments in Australia have a tendency towards actions which, in the conditions of the nineteen seventies, aggravate inflation. Mistakes by both types of government were important in the increase in the rate of inflation in Australia.

Liberal-Country Party governments represents to a large extent the interests of farmers who are mainly exporters and businessmen who compete with manufactured imports. For this reason Liberal-Country party governments have a tendency to devalue when it is unnecessary, and not to revalue when such a course of action is strongly desirable. The refusal of the Liberal-Country Party governments to revalue in 1971 / 72 can be regarded as the start of Australia's inflationary problems in the nineteen seventies. The coefficient of 13. on foreign prices in our equation is a little low to be plausible, even if one accepts this figure it would have been possible by revaluing in 1970 and 1971 to keep the rate of inflation below four and a half per cent in each of the years 1970 / 71 and 1971 / 72. When the Labor government came to power at the end of

1972 it promptly revalued, which was why the rate of inflation fell in 1972 / 73. However, a revaluation one or two years earlier would have been much better, particularly in preventing the build up of inflationary expectations.

The next acceleration in the rate of inflation in Australia was due in large part to the Labor government's policy towards wage rates. Labor governments represent, in particular, trade unionists and working class people in Australia. The Labor government of Mr. Whitlam held power in Australia for the years 1973, 1974 and 1975. It came to power with the belief that it was possible to increase real wages rapidly at the expense of profits without disastrous consequences. When it came to power it tried to do this, and in 1973 and 1974 the Labor government had a policy of making the public service a pace-setter in wages and working conditions, and supporting generous wage increases before the Conciliation Commission, which sets award wage rates, or the minimum rates that can be paid in each of a wide range of occupations. From December 1973 to December 1974 male award wage rates increased by no less than 33 per cent (compared with an increase of 16 per cent in the consumer price index). The increase in female wage rates was even more startling being 39 per cent in the year ending December 1974. In fact the index of female award wage rates doubled between December 1972 and June 1975. (Male award wage rates increased by 67 per cent over the same period.) Increases in award wage rates in excess of prices plus productivity were responsible for roughly three quarters of the increase in the rate of inflation that occurred between 1972 / 73 and 1974 / 75.

The policies of the Labor government were not the only reason for the rapid increases in award wage rates. Many companies, particularly multinational companies, judged on the basis of what had already happened in other countries, that rapid rises in wage rates were inevitable in Australia, and did not oppose them. However, the fact that the government encouraged rather than opposed wage increases must have been a very important factor underlying the wage explosion.

The Labor government realized the effects of its wages policies and by 1975 the policies had changed, but by then the damage had been done. Any rate of inflation, once established, tends to perpetuate itself unless something is done to change it. Doing things to change the rate of inflation downwards is usually more painful than doing things to change the rate of inflation upwards, at least in the short-run. The Labor government had started to take the painful steps necessary to reduce the rate of infla-

tion mainly through tight money and fiscal policy plus arguments for wage restraint when the political crisis of November 1975 intervened and the government changed.

The new Liberal-Country Party government led by Mr. Fraser followed even tougher monetary and fiscal policies. It also took a very strong stand before the Conciliation and Arbitration Commission opposing wage increases. However, the government did devalue in November 1976 and the steady decline in the rate of inflation in Australia since 1975 caused by tough demand management policy plus wage restraint was slowed down by that decision. In each of the last three financial years the rate of inflation in Australia has declined substantially. The major reasons have been moderation in award wage rate increases and the high level of unemployment but in 1975/76 the import price index rose much less than the previous year which also helped significantly to reduce the rate of inflation. In 1974/75 the increase in award wage rates was almost twice that in the consumer price index. Since then award wage rates have increased at about the same rate as prices. The Conciliation and Arbitration authorities have granted a little less than full indexation in general wage increases, but there have been some extra increases for special reasons in particular award wage rates. The contrast between 1974/75 and 1975/76 in the behaviour of award wage rates is by far the most important single reason for the drop in the rate of inflation. The effects continued to reduce inflation in future years because of the effects of a fall in the rate of inflation on price expectations.

Unemployment has been rising in Australia for nearly five years. In the first half of 1974 the economy was operating at the full employment level of under 2 per cent. Then in the second half of 1974 unemployment rose sharply. By the end of 1975 it had reached 5 per cent. The rate of increase of unemployment slowed down but unemployment continued to rise and is currently at $6\frac{1}{2}$ per cent. According to our estimated equation, if award wage rates are increased at the same rate as prices, 1.8 per cent is the level of unemployment which will neither increase nor decrease the rate of inflation. Hence it can be seen that the present levels of unemployment are directly reducing the rate of inflation by about one percentage point a year. They may be having an indirect effect as well. One reason why the Conciliation and Arbitration Commission have no general increases in award wage rates for productivity reasons is probably because of the high level of unemployment.

The present government is committed to the goal of reducing the rate of inflation

to much below its present level and to giving this much higher priority than reducing the level of unemployment. If it does not change its priorities (and hence its policies) one may expect the rate of inflation to continue to decline despite occasional set backs due to random shocks and other factors not taken into account in our estimated equation. However, the rate at which inflation declines will itself become slower as time passes. The big initial decline due to the large drop in the rate of growth of award wage rates is still having a downward effect on the rate of inflation through the expectations mechanism. But since the coefficient on p^* is $.82$ ³⁾ each year this effect is smaller than in the previous year.

3) The coefficient on p^* is .47 and that on w_a is .35. If we add the equation $w_a = p^*$ which describes the situation in the last three years the coefficient on p^* is .82.