IMPACT OF DEMOGRAPHIC CHANGE ON INDUSTRY STRUCTURE IN AUSTRALIA

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STRUCTURAL ADJUSTMENT AND THE MACROECONOMY

by

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ABSTRACT

In this paper the structural dimensions of macroeconomic management are explored. Here 'structural' means having to do with the distribution of economic activity across industry groupings, across occupations, and among states. It is concluded that many of the apparently structural problems of the economy would disappear with a return to macroeconomic health. Three possible approaches towards the elimination of the current high levels of unemployment are considered, namely :

(i) additional protection for the import-competing sector;

(ii) a general expansion of aggregate demand;

(iii) a reduction in the real costs of employing labour.

On the basis of computer simulations using the ORANI model, it is concluded :

(a) Increasing protectionism cannot lift the economy out of its present difficulties. The main effects of a uniform increase in protection are to redistribute unemployment among industries, occupations and regions, and to increase the rate of inflation.

(b) A general expansion in aggregate demand -- that is, equal percentage increases in real private investment spending, real consumption, and real government spending -- would significantly increase employment but would aggravate the inflation

problem and adversely affect both import-competing and exporting industries, with a consequently unbalanced pattern of stimulation across industries, occupations and states. The demand expansion would also lead to increasing balance of payment difficulties.

(c) A reduction in real wage costs would significantly increase economic activity and employment, but would also be uneven in its incidence across industries, occupations and states. This is because import-competing and exporting industries receive a larger benefit than industries in the non-traded sector from a reduction in real costs.

(d) The differential incidence across industries, occupations and states of a general expansion in aggregate demand is in the opposite direction to that resulting from a cut in real wage costs. A macroeconomic 'package' combining both approaches, therefore, would provide balanced stimulation of industries, occupations and regions. Such a package, moreover, would reduce the rate of inflation.

(e) These results are robust in the sense that they apply whether the parameter file and configuration of the ORANI model is set up to reflect strong neo-classical assumptions on the one hand, or strong Keynesian assumptions on the other.

simulation specification is explained as follows. Compared with the original specification, under the specification used in this appendix, demand expansion is projected to be less harmful to the balance of trade. On the other hand, in view of the fixity of exports, wage cuts are projected to be less effective in improving the balance of trade. Thus, while any given demand increase produces less deterioration on the balance of trade, any given deterioration on the balance of trade requires a greater wage cut for its elimination.

In conclusion, it appears that a favourable set of conditions for a purely demand-stimulatory approach to macro-economic recovery would occur if

(a) industries typically exhibited constant costs (or horizontal supply curves) even in the short run, and

(b) foreign demand elasticities for domestic products were very high.

These circumstances would allow demand and employment expansions with only minor inflationary effects. Flexibility in exports would limit the real cost reductions required on account of the balance of trade. By contrast, if either exports are insensitive to domestic costs or if domestic producers typically have upward sloping supply curves, then real cost reductions are likely to be at the heart of macroeconomic recovery.

STRUCTURAL ADJUSTMENT AND THE MACROECONOMY*

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1. The Importance of Correct Diagnosis

Structural change is continually taking place in all economies which are growing in terms of real income per head and/or population. Innovation, capital accumulation, demographic change and changing external terms of trade, all can be expected to lead to a changing occupational composition of the workforce, a changing geographic distribution of the population and a changing industrial composition of the economy. To the extent that such changes follow an evolutionary course involving new patterns of commitment of new resources at the margin, but avoid the need to transfer already committed resources from one activity or area to another, no structural adjustment is involved. We define structural adjustment to mean the process of transferring already committed resources (plant, labour, working capital) from one activity and/or location to another. Structural change involves changing the composition of the economy but need not, in a growing economy, involve structural adjustment.

Depending on the degree to which factors in the economy are mobile, even the transfer of committed resources need not emerge as a social problem. Recent empirical work indicates surprisingly high mobility

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* This paper uses simulations from the ORANI model of the IMPACT Project. The interpretations of these simulations and the conclusions drawn are those of the authors alone. They do not necessarily reflect the position of the management of the IMPACT Project nor of its participating agencies.

on the part of the Australian workforce between jobs and between occupations.[1] On the evidence, Australian firms are able to change their activities and to retrain and reallocate labour and other resources to a surprisingly large extent without any apparent need for public intervention.

A structural adjustment problem is defined to exist when the rate at which resources are required to be transferred patently exceeds the ability to cope of those who own and/or control the resources in question. As a result, resources may become idle and remain so for a longer period than makes good social sense. Structural adjustment problems, of course, are much more likely to emerge when the required rates of resource transfer are high and the overall level of economic activity is low. As a general rule, economies which are experiencing at least moderate rates of growth will cope more easily with pressures for compositional changes. Thus, structural pressures will loom larger in policy discussions during periods of macroeconomic recession. At such times, the demand for structural adjustment assistance is likely to be greatest. Unfortunately, however, it is at such times that rational adjustment assistance policy is hardest to implement. The difficulty is to distinguish genuine cases of structural maladjustment from problems associated with malfunctioning of the macroeconomy.

Obvious dangers inherent in a depressed macroeconomic climate in which every industry in difficulty seeks special terms are as follows :

1. Industries Assistance Commission, Structural Change in Australia (Canberra : Australian Government Publishing Service, June 1977), Ch. 5.

Not surprisingly, Table 4 column I is a more favourable picture of the effects of demand expansion than the corresponding column (column II) in Table 1. Also, not surprisingly, Table 4 column II is a less favourable picture of the effects of real wage cuts than that in column IV of Table 1. Under the assumptions of constant costs in the non-agricultural industries and fixed exports, a one per cent increase in aggregate absorption generates more employment, less inflation and less deterioration on the balance of trade than was the case in our earlier simulation. Some inflation and deterioration on the balance of trade remains. Because of diminishing returns, agricultural output expansions lead to price increases which become generalized throughout the economy via their impact on money wages. Thus we have substitution in favour of imports. In addition, import demand is stimulated because of domestic output expansion. When we turn to the real wage cut simulation we find that a one per cent reduction in all real wages generates less employment and leads to a smaller improvement in the balance of trade than was the case in column IV of Table 1. In Table 4, substitution of labour for capital is limited to the agricultural industries and no increase in exports is allowed. This leaves import replacement as the main mechanism by which wage cuts increase employment. According to Table 4, a one per cent reduction in real wages gives domestic import-competing industries sufficient competitive edge such that aggregate imports fall by 1.423 per cent.

In summary, the comparative insensitivity of our macro package (i.e. the demand expansion and wage reduction required to generate a 5 per cent increase in aggregate labour demand without a deterioration in the balance of trade) with respect to the three major changes in the

At the same time, the quantity of labour used per unit of output has been made independent of the level of output. All output expansions are accommodated by balanced[41] increases in the use of labour and previously idle capital. Thus price changes for manufactured goods and services are associated only with changes in variable input prices and not with changes in output levels. On the export side, we have assumed that Australia satisfies fixed foreign demands at fixed foreign currency prices. In the background of this very rigid export story is the assumption that the government adjusts domestic institutional arrangements (including subsidies) so that even in the face of changes in the domestic cost situation, our major export industries are willing to satisfy the given export demand at the given foreign currency price.

The striking feature of Table 4 is that despite these radical departures from the conditions underlying our earlier simulations, the general macro policy implications remain intact. On combining the results in column I (the impact of a one per cent increase in aggregate absorption assuming fixed real wages)[42] with those in column II (the impact of a one per cent reduction in real wages assuming fixed aggregate absorption), we find that a 4.80 per cent expansion in aggregate absorption together with a 4.17 per cent reduction in real costs per unit of labour would generate a non-inflationary 5 per cent increase in aggregate employment with no deterioration in the balance of trade. This compares quite closely with our earlier package of a 3.21 per cent increase in aggregate absorption combined with a 6.15 per cent reduction in real costs per unit of labour.

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41. Labour and capital are used in fixed proportions. (The elasticity of substitution between labour and capital is set at zero.)

42. In terms of Table 5, the results in column I of Table 4 were generated with $c_R = i_R = 1$ and all other exogenous variables set at zero. The results in column II were obtained with the exogenous variables set so that $f_{(g+2)1m} = -1$ for all m. Again, all other exogenous variables were at zero.

(a) By definition, most industries and enterprises experience difficulty in a severe macroeconomic slump. Not all of them can receive special terms; that is, not everyone can attain a relative advantage. Even so, governments may find it politically attractive to pretend otherwise.

(b) The emphasis on the special circumstances of individual industries may lead to totally inappropriate, specific, instruments being used in an attempt to solve essentially sector-wide or economy-wide problems.

(c) Those industries whose perception of their own case as special is accurate (and which by definition would still be in difficulty after the slump is over), inevitably will continue to need special assistance, and possibly at accelerating levels, during economic recovery and beyond.

(d) Those industries whose perception of their own case as special is inaccurate (and which by definition would recover satisfactorily with the macroeconomy) would be better served by measures which restore macroeconomic health at the earliest possible moment. From the point of view of the more efficient functioning of the economy overall, the smaller the number of industries whose normal operating procedures depend on selective bureaucratic intervention, the better. From the point of view of the cost structures confronting the industries concerned (i.e., those whose health would recover with that of the macroeconomy), the lower the level of special assistance to industries described in (c) above, the better.

To summarise, intervention based on the misidentification of a macro problem as one requiring action in the form of structural adjustment assistance

would lead to inappropriate policy responses. A result of these policies would be to magnify any genuine underlying structural adjustment problem that would have to be faced after macroeconomic recovery. This would occur because industries totally lacking in long run prospects would emerge from the recession with a higher capital stock than otherwise and with established claims to subsidies (or other assistance) capitalized into their financial structure. They would then compete against naturally healthy industries for the available labour supply in a tighter labour market.

If the above arguments are accepted, it follows that major assistance should not be given to industries in the name of structural adjustment under conditions of general high unemployment and low capacity utilization -- the economy overall, as well as the majority of those seeking special terms, would be better served by vigorous attempts to restore macroeconomic health.

A key current issue, then, is what can be done to restore macroeconomic health.[2] In this paper we use simulations from the ORANI

2. Many other issues need to be considered in any comprehensive approach to structural adjustment. First, and most obviously, the impact of changing international comparative advantage on the secular prospects of domestic industries needs to be studied. Within the IMPACT Project, a start on this has been made in Peter B. Dixon, John D. Harrower and Alan A. Powell, "Long Term Structural Pressures on Industries and the Labour Market", Australian Bulletin of Labour, Vol. 5, June 1977, pp. 5-41, and by Dixon and Powell in "Structural Adaptation in an Ailing Macroeconomy", (forthcoming), Chs 4 and 5. Second, insofar as they are not covered above, the impact of prospective changes in demography and technology need to be investigated -- the SNAPSHOT model (P.B. Dixon, J.D. Harrower and A.A. Powell, "SNAPSHOT, a Long Term Economy-Wide Model of Australia : Preliminary Outline", Impact of Demographic Change on Industry Structure in Australia, Preliminary Working Paper No. SP-01, Industries Assistance Commission, Melbourne, February, 1976.) has been built with these in mind. Third, the timing of the winding down of those parts of industries lacking long-run viability, remains an open issue.

Table 5 continued ...

Simulations reported in Tables 1-3		Simulations reported in Table 4	
(a) Exogenous Variables			
Variable	Description	Variable	Description
$f^{(5)}_{is}$. $f^{(5)}_{g+1}$.	Other demand shift terms.	$f^{(5)}_{is}$. $f^{(5)}_{g+1}$.	
$f^{(2)}_{j}$, $j \notin J$.	Exogenous investment.	$f^{(2)}_{j}$, $j \notin J$.	
f^{e}_{j} .	Shifts in foreign export demands.	f^{e}_{j} .	
$f_{(g+3)j}$.	Shifts in the real price of "other" cost tickets.	$f_{(g+3)j}$.	
q .	Number of households.	q .	

(b) Parameter Values

With the exception of the improvements noted in footnote 8 , all parameters were set as for the tariff change simulations in Dixon, Parmenter, Ryland and Sutton, op. cit., ch. 4. In particular, the elasticity of substitution between capital and labour was set at 0.5 for all industries.

The elasticity of substitution between capital and labour was set at 0.0 for all industries except the agricultural industries, 1, 2, 3, 4 and 6. For these industries, it remained at 0.5. With the exceptions of the improvements noted in footnote 8 , all other parameters were set as for the tariff change simulations in Dixon, Parmenter, Ryland and Sutton, op. cit., ch. 4.

Table 5

TECHNICAL SPECIFICATIONS

Simulations reported in Tables 1-3		Simulations reported in Table 4	
(a) Exogenous Variables			
Variable[1]	Description	Variable	Description
$p^m_{j2\cdot}$ ... $p^m_{g+1\cdot}$	C.i.f. foreign currency import prices.	$p^m_{j2\cdot}$ ... $p^m_{g+2\cdot}$	
$t_{j\cdot}$	One plus the ad valorem tariffs.	$t_{j\cdot}$	
$\phi\cdot$	The exchange rate, $A per $US.	$\phi\cdot$	
s_j , $j\in G$.[2]	One plus the ad valorem export subsidies.		
$x^{(4)}_j$, $j\notin G$.	Export demands.	$x^{(4)}_{j\cdot}$	Export demands (All export demands are exogenous.)
		r_j , j = non-agricultural industry.	Real rentals per unit of capital.
$k_j(0)$.	Current capital stocks in use.	$k_j(0)$, j = agricultural industry.	Current capital stocks in use.
$c_{R\cdot}$	Real aggregate household expenditure.	$c_{R\cdot}$	
$i_{R\cdot}$	Real aggregate private investment.	$i_{R\cdot}$	
$n\cdot$	Supply of agricultural land.	$n\cdot$	
$f_{(g+2)1m\cdot}$	Wage shift variables.	$f_{(g+2)1m\cdot}$	

Table 5 continues ...

1. Notation and further details are explained in Dixon, Parmenter, Ryland and Sutton, op. cit..

2. G is the set of "export" industries, i.e., exports are endogenous for $j\in G$. In our first set of simulations, G = {1, 2, 9, 10, 11, 12, 15, 22, 27, 60, 61}. In the Table 4 simulations, G is empty.

model[3] in a discussion of three broad approaches :

(i) across-the-board increases in protection against import competition,

(ii) Keynesian demand stimulation,

and

(iii) general reductions in real wage costs.

Our simulations provide a basis for discussing the likely effectiveness of each approach in tackling Australia's major short-run economic problem -- high unemployment. They also allow us to look at the structural implications of alternative macro policies. We find that different approaches to macroeconomic policy can have quite different effects on individual industries, occupational groups and regions. Therefore, while we acknowledge that the same macroeconomic goals might be reached using different policy instruments, we wish to stress that every effort should be made to assess the structural incidence of alternative macroeconomic policies. For example, macro policies A and B may appear to be equally likely to reduce inflation and unemployment in aggregate, but A may be preferred to B on the grounds that it is likely to achieve a better balanced stimulation of activity across industries and regions.

The paper is organized as follows. In section 2 we set out the assumptions underlying our simulations. Then in section 3 we discuss the macro results, i.e. the implications of tariff increases, demand stimulation and reductions in real wage costs for aggregate imports and exports, the price level, aggregate employment and employment by broadly

3. See P.B. Dixon, B.R. Parmenter, G.J. Ryland and J.M. Sutton, ORANI, A General Equilibrium Model of the Australian Economy : Current Specification and Illustrations of Use for Policy Analysis -- First Progress Report of the IMPACT Project, Vol. 2 (Canberra : Australian Government Publishing Service, August, 1977).

defined occupational groups. On the basis of section 3 we conclude that reductions in real wage costs are likely to be an unavoidable element in macroeconomic recovery. Thus in section 4 we address various issues concerning the implementation of reductions in real wage costs. In section 5 we turn to the industry and regional aspects of alternative macro policies. We show that a well-balanced stimulation of the economy would follow from an appropriate reduction in real wage costs combined with an increase in aggregate demand. Thus our results support the view that macroeconomic recovery could be associated with significant growth in almost all industries and that many problems which may appear to be of a structural nature could in fact disappear following recovery. Section 6 contains some concluding notes. Finally, in the appendix we show that our general conclusions are robust under some radical changes in the simulation specifications. In particular, we find that the need for wage moderation is intimately connected with the balance of trade and is independent of the usual assumptions built into general equilibrium models that short-run supply curves are upward sloping, that short-run substitution elasticities between capital and labour are non-zero and that foreign demand elasticities for local exports are high.

2. Assumptions Underlying the Simulations

It is important to understand our use of the comparative static method if confusions are to be avoided in interpreting our simulations. This is especially true in relation to our results on the effects of varying the costs of employing labour. We regard current employment demand, output levels, capacity utilization levels, etc., as being equilibrium

Table 4

MACRO PROJECTIONS UNDER CONSTANT COSTS, ZERO CAPITAL-LABOUR SUBSTITUTION ELASTICITIES AND FIXED EXPORTS

Variable †	Description	PROJECTIONS* I: 1% Increase in all Real Absorption	II: 1% Cut in Real Wages	III: 4.80% Increase in all Real Absorption plus 4.17% Cut in Real Wages
μ	Aggregate Employment	.806	.271	5.00
e	Aggregate exports (foreign currency value)	.000	.000	0.00
m	Aggregate imports (foreign currency value)	1.237	-1.423	0.00
ΔB	Balance of trade, Exports - Imports	-0.051	0.058	0.00
$\xi^{(3)}$	Index of consumer prices	.504	-1.919	-5.59
$\xi^{(2)}$	Capital goods price index	.404	-2.013	-6.46

* All projections are percentage changes with the exception of ΔB. ΔB has the units billions of 1968-69 Australian dollars.

† Notation used in Dixon, Parmenter, Ryland and Sutton, op. cit.

(b) that the elasticity of substitution between capital and labour is non-zero in the short run, i.e. a given capital stock can be used with varying amounts of labour depending on relative factor prices, and

(c) that foreign demand curves for Australian products are highly elastic.[38].

In Table 4 we provide some ORANI results[39] from the model set up so that

(i) constant costs and zero substitution elasticities prevail in all but the agricultural industries, (for agriculture the original ORANI specification is retained), and

(ii) export quantities and foreign currency earnings are totally insensitive to cost conditions inside Australia.

Table 5 sets out the technical specification for the simulations and could be read in conjunction with Dixon, Parmenter, Ryland and Sutton, op. cit., especially section 19. Intuitively, what we have done on the production and pricing side is to modify the model so that prices for manufactured goods and services equal variable costs (materials and labour) plus a constant percentage markup on labour costs to cover overheads and profits.[40]

38. In the simulations reported in Tables 1-3, all capital-labour substitution elasticities were set at 0.5 and all the elasticities of foreign demand for Australian products were in the range 2½ to 20. See Dixon, Parmenter, Ryland and Sutton, op. cit., pp. 159-163 and 173.

39. Table 4 contains only some macro projections. Space limitations prohibit the presentation and analysis of the underlying occupational, industry and regional employment results. Readers requiring these results can obtain them from the authors.

40. Alternatively, the markup could have been calculated on total variable costs. Such a change would not, we suspect, affect any of the conclusions of this appendix.

levels at the prevailing set of real wage rates. These wages are exogenous inputs to the ORANI simulations reported here. In our view, it is reasonable to assume that the 'real wage overhang'[4] generated by the explosion in real wages between 1971-72 and 1974-75 has now been largely eliminated by firms shedding labour (or failing to take on additonal labour where the potential for such would have existed if real wages had not risen so fast in the three years ending 1974-75). In simulating the effects of a decline in real wage costs we solve for the induced change in employment demand which would be generated after firms regain a new equilibrium reflecting the new (exogenous) real labour costs. Similarly, our simulations of the effects of changes in protection and changes in aggregate demand refer to the induced changes in equilibrium levels of employment demand, industry outputs, etc.

All the simulations reported in the main part[5] of the paper have comparatively short-run focuses. We assume that physical capital stock in each industry is fixed. Output variations are achieved by changes in the amount of labour applied to a given amount of capital, i.e. output changes reflect variations in the intensity of capital utilization. To be more specific, the first ORANI simulation (see Tables 1-3 in the next section) shows the percentage changes in employment, the rates of exports, the rates of imports, etc., which could be expected to arise as a result of a 25 per cent increase in all tariffs after a period sufficiently short that we can ignore induced changes in the

4. By the real wage overhang, we refer to the gap between the costs to the employer of a unit of labour and the marginal value product of that unit.

5. The discussion in this section excludes the simulations described in the appendix.

availability of fixed capital. On the other hand, the results include the effects of the tariff increase on the allocation of investment across industries, i.e. enough time is allowed for the effects of the tariff increase to alter investment plans and demands for inputs into capital formation, but not enough time is allowed for the changed investment plans to significantly change industry capital stocks from the levels at which they would have been in the absence of the tariff change. While it is obviously very difficult to put a calendar time on the ORANI short-run, we think that the sorts of results discussed in this paper could reasonably be expected to appear after about one or two years. For example, referring to Table 1, column I, we expect that if all tariffs were increased by 25 per cent, then after one or two years, aggregate employment would be .001 per cent less than it would otherwise have been. (Of course this expectation is conditional on various assumptions, to be explained, concerning wage indexation, the exchange rate, etc.)

The second common feature of all the simulations is that they refer to a situation of slack labour market conditions. Employers are not limited by labour shortages in any occupational group and they can obtain as much labour as they desire at the constant real wage rates, i.e. all wages are 100 per cent indexed to the ORANI consumer price index.[6] Results under alternative wage indexation assumptions are easily derived. For example, a reader who was interested in the effects of a 25 per cent

6. It is important to distinguish the concept of wage indexation used in this paper from its popular usage. In the language used here we would say that wages were x % indexed in 1976-77 if per unit costs of labour actually rose by (xy/100) % in that year, where y is the percentage increase in the consumer price index in 1976-77.

Appendix : ORANI in Constant Cost Mode[36]

The inevitable question at the end of a study of this type is how much reliance can be placed on the results. Economic science is, unfortunately, many years away from a time when statistically derived confidence intervals can be associated with projections based on a model such as ORANI. All we can rely upon is our assessment of the plausibility of the mechanisms by which the model results are generated. As in our earlier IMPACT applications papers,[37] we have attempted to give readers ample opportunity to trace out what it is about the ORANI model which is primarily responsible for our conclusions. In this appendix we extend our description of the ORANI mechanisms with some sensitivity analysis.

A principal difficulty with sensitivity analysis is to keep it manageable. In a large model there are literally millions of seemingly sensible sensitivity questions which could be asked. Here we have chosen three very basic ones : to what extent do our conclusions depend on the assumptions

(a) that the marginal product of labour declines as we expand output,

36. This appendix was inspired by W.M. Corden's recent paper "Wages and Unemployment in Australia", presented at the Seventh Conference of Economists, Macquarie University, August 1978. In particular, we seek to illustrate his proposition (stated on p. 26) that "Once the balance of payments effects of demand expansion are introduced and the exchange rate is allowed to depreciate, a "diminishing returns" model is the correct one even where there are constant returns domestically. If demand expansion is to be successful in increasing employment the real wage must fall. This conclusion could only be avoided if the country were willing to borrow abroad to avoid a depreciation or if there were increasing returns domestically, ..."

37. A complete list of the IMPACT papers has been prepared. Copies of all papers are available on request.

reductions in real wage costs combined with a moderate expansion in aggregate demand, then we could expect a substantial increase in employment in all industries and all states. This led us to conclude that many of the problems which appear to be special to particular industries are in fact related to the unsatisfactory functioning of the macroeconomy.

We have tried not to underestimate the difficulties involved in implementing macroeconomic recovery. In section 4 we emphasized that the hard part, the reduction in real wage costs, must come first. As real wage costs are reduced, we would expect the balance of payments to improve. This would allow the government freedom to pursue expansionary monetary and fiscal policy as required. In summary, our views are both optimistic and pessimistic. We are optimistic in that we completely reject the often expressed view that high unemployment is necessarily with us to stay. We believe that macroeconomic recovery could be achieved in a comparatively short time. On the other hand we are pessimistic in that we can see no easy options. In particular, we believe that protectionism will offer no relief from Australia's current economic ills -- it will do little except redistribute unemployment and intensify the rate of inflation. Similarly, general expansions in aggregate demand, in the absence of reductions in real costs, are likely to be merely inflationary. Without reductions in real wage costs, macroeconomic recovery will be left to chance. It will depend on a significant improvement in Australia's terms of trade, a dramatic autonomous improvement in investor confidence or some other lucky event which raises the anticipated value of employing additional labour. If we are to ensure continuous prosperity for the entire community, we must allow flexibility in real wage costs. This means flexibility in both directions in the overall wage level, flexibility in relativities between occupations and flexibility in the relativities between regions.

increase in all tariffs under 70 per cent wage indexation could compute

$$\xi_{70}^{(3)} = \xi_{100}^{(3)} + \eta_{\xi^{(3)}(-w)} .3\, \xi_{70}^{(3)} , \qquad (1)$$

i.e.

$$\xi_{70}^{(3)} = \xi_{100}^{(3)} \Big/ \left(1 - .3\, \eta_{\xi^{(3)}(-w)}\right) ,$$

where $\xi_{100}^{(3)}$ and $\xi_{70}^{(3)}$ are the effects of the tariff increase on the consumer price index under 100 and 70 per cent wage indexation respectively. ($\xi_{100}^{(3)}$ is 1.641, see Table 1, column I.) $\eta_{\xi^{(3)}(-w)}$ is the elasticity of the consumer price index with respect to a reduction in real wages (i.e. -1.118, see Table 1, column IV). Equation (1) says that the effect on the consumer price index of a tariff increase under 70 per cent wage indexation consists of two parts, the effect under fixed real wages and the effect of the reduction (i.e. $.3\xi_{70}^{(3)}$) in real wages. Having obtained $\xi_{70}^{(3)}$, (i.e. 1.229 in this case) further results under 70 per cent wage indexation are computed as

$$x_{70} = x_{100} + \eta_{x(-w)}(.3)(1.229)$$

where x_{100} and x_{70} refer to ORANI results for variable x under 100 70 per cent wage indexation and $\eta_{x(-w)}$ is the elasticity of variable x with respect to a reduction in real wages.

A third assumption applying to all simulations presented is that the exchange rate is fixed. We examine the effects of tariff changes, etc., in an environment where the balance of trade is allowed to move uncorrected by exchange rate adjustments.[7]

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7. In fact, we believe exchange rate movements may have little effect on the balance of trade and that their main impact is likely to be on the rate of inflation. See Dixon, Parmenter, Ryland and Sutton, op. cit., ch. 4.

The final noteworthy assumption made throughout this paper concerns aggregate real absorption, i.e. household expenditure, government expenditure and private fixed capital formation. We assume that aggregate real absorption and its major components are controlled by monetary and fiscal policy; that economic instruments (not modelled in ORANI) are available for influencing real absorption quite independently of changes in tariffs and real wages.

In summary, the principal assumptions underlying our five simulations in Tables 1-3 are :

(i) physical capital stocks available in each industry are not affected by the policy change under examination,

(ii) slack labour market conditions apply,

(iii) the exchange rate is fixed,

and

(iv) real domestic absorption is controlled independently of protection and wage policy.

Readers requiring further details on the background assumptions adopted here could refer to Dixon, Parmenter, Ryland and Sutton, op. cit., section 19. The current simulations have been run under precisely the same technical specifications as described in that source, although certain improvements have been made to our data and parameter files.[8]

8. The principal modifications made consist of reallocation of base year gross operating surplus (GOS) between fixed capital and other claimants, and the use of new econometric estimates of the 'Frisch parameter' and of household expenditure elasticities of demand. The latter are reported in Ashok Tulpule and Alan Powell, "Estimates of Household Demand Elasticities for the ORANI Model", Impact of Demographic Change on Industry Structure in Australia, Preliminary Working Paper No. OP-22, Industries Assistance Commission, Melbourne, September 1978. The principal effect of reallocating GOS was to make industries overall somewhat more capital intensive. In the case of agricultural industries, the return to owner/operators' labour was aggregated with the return to fixed capital; i.e. owner/operators' labour becomes fixed in the short run.

being 3.1 per cent for industry 57. The preponderance of small negatives in the projected changes in rates of return highlights the idea that owners of capital do not necessarily benefit from a reduction in real wages. In those industries which have little connection with international trade, cost reductions under conditions of fixed aggregate demand, generate matching price reductions. To the extent that the non-trading industries use traded inputs, there can be a squeeze on their profits and a reduction in their rates of return. As was emphasized in section 3(c), ORANI projects a large impact on the balance of trade from a reduction in real wages. The reason is now clear : the industries with the most to gain from real wage cuts are the traded goods industries. Their selling prices are largely independent of their buying prices for labour and intermediate inputs.

To conclude this section, we return briefly to the results for the macro package. We remarked at the beginning of our description of the industry and regional results that the macro package produces a well-balanced stimulation of the entire economy. In achieving this balance, both real wage cuts and demand stimulation play a role. Real wage cuts alone would generate a lop-sided stimulation concentrated in the traded-goods industries. Demand stimulation alone would have the opposite effect, stimulating the non-traded sector at the expense of import-competing and export industries.

6. Concluding Notes

In this paper we have used the ORANI model to assist in a discussion of the industry and regional implications of macroeconomic recovery. We have found that if macroeconomic recovery were secured via

are treated as specific (rather than ad valorem). Therefore, according to ORANI, there is an increase in the real burden of sales taxes under any stimulus which generates an overall reduction in prices. For the construction-related industries (57, 58, 84, 85), the slight employment losses reflect the fixity of real aggregate investment. (It will be recalled that our simulation of the effects of real wage cuts was conducted with fixed real aggregate investment and consumption.) Because the wage cut favours the export industries, it induces a reallocation of the investment budget towards agriculture. Agricultural investment is slightly less construction-intensive than investment in general. Thus, the construction industries are left with slightly reduced demand. For retail trade, the reduction in employment arises from the assumption of fixed real consumption. The changes in relative prices induced by the wage cut happen to cause a reallocation of the consumer budget away from retail-intensive commodities.

Apart from the export-related industries, the other main winners from a real wage cut are the import competitors. Reductions in domestic costs are particularly valuable for these industries (e.g. 29, 30, 33, 41, 47, 65) because they generate import replacement demand. However, a glance at the regional results confirms that the effects on the export industries are dominant. The exporting states, Queensland and Western Australia, receive the biggest percentage boosts in employment, whereas the smallest gain is for Victoria, the least export-oriented state.

Before leaving the real wage simulation, it is worth commenting on the rate of return results. Perhaps surprisingly, ORANI indicates reductions in the rates of return for more than half the industries (57 out of 109). In every case, however, the reduction is small, the maximum

3. The Macro Results

Our first set of results is concerned with across-the-board increases in protection, the next two sets simulate the effects of demand expansions, the fourth gives results for a uniform reduction in all real wages,[9] while in the fifth we consider a combination of demand expansion and wage reduction. In this section, we analyse the macro projections, i.e. the material presented in Table 1. Consideration of the industry and regional projections, Tables 2 and 3, is delayed until section 5.

(a) The Macro Impact of a General Increase in Protection

Protectionism has always been a tempting strategy during periods of economic recession.[10] In Australia, depressed economic conditions have often led to policies of "temporary assistance". An example is the current widespread use of "temporary" quantitative restrictions. Economic recessions have also been used as a rationale for delaying the reduction of tariffs and other protective devices.

It is our view that protection is at best an ineffective short-run approach to employment creation and at the same time may impose

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9. We refer to the per unit costs of employing labour, not to labour income. Take-home pay can vary independently of real wages (in our sense) via changes in income and payroll taxes and in holiday and other fringe benefits.

10. "The drift toward protectionism and autarchic policies of the past 60 or 70 years has been sharply accelerated by each depression. The movement away from free trade exhibits not only a secular trend, but also cyclical oscillations. Depressions and wars bring an outburst of protectionism -- higher tariffs and other impediments to trade which are only incompletely removed during the following peace or prosperity period." Gottfried Haberler, "Some Factors Affecting the Future of International Trade and International Economic Policy", in Seymour E. Harris (ed.) Economic Reconstruction (New York : McGraw-Hill, 1945), p. 320.

Table 1

RESULTS AND SELECTED DATA, THE MACRO PROJECTIONS

Variable+	Description	PROJECTIONS* I	II	III	IV	V
		25% Tariff Increase	1% Increase in all Real Absorption	1% Increase in Real Government Expenditure	1% Cut in Real Wages	3.21% Increase in all Real Absorption plus 6.15% cut in Real Wages
μ	Aggregate employment	-.001	.577	.158	.514	5.00
	Employment by occupation					
ℓ_1	Professional white collar	-.029	.863	.423	.339	4.86
ℓ_2	Skilled white collar	.073	.853	.224	.374	5.04
ℓ_3	Semi & unskilled white collar	.021	.920	.170	.332	5.00
ℓ_4	Skilled blue collar (metal & electrical)	.251	.469	.096	.666	5.60
ℓ_5	Skilled blue collar (building)	.107	1.070	.122	.100	4.05
ℓ_6	Skilled blue collar (other)	.189	.504	.044	.387	4.00
ℓ_7	Semi & unskilled blue collar	.101	.408	.106	.601	5.01
ℓ_8	Rural workers	-.986	-.693	.060	1.266	5.56
ℓ_9	Armed services	.000	.968	.968	.000	3.11
e	Aggregate exports (foreign currency value)	-1.863	-1.899	-.087	1.357	2.25
m	Aggregate imports (foreign currency value)	-1.899	1.815	.178	-.633	1.93
ΔB	Balance of trade, Exports - Imports	.010	-.144	-.011	.076	0.00
$\xi^{(3)}$	Index of consumer prices	1.641	1.707	.056	-1.118	-1.40
$\xi^{(2)}$	Capital goods price index	2.232	1.468	.065	-1.281	-3.16

* All projections are percentage changes with the exception of ΔB. ΔB has the units billions of 1968-69 Australian dollars.

\+ Notation used in Dixon, Parmenter, Ryland and Sutton, op. cit..

and the construction-related industries (55 - 59). A second group of industries which does well consists of those supplying commodities for which household expenditure elasticities are high (for example, household durables such as textile floor coverings (32), furniture, etc. (40) and household appliances, n.e.c. (71)).[35] Turning to the regional results, we see that ORANI implies that Keynesian demand stimulation generates employment in all states. However, the export-oriented states, Western Australia and Queensland, benefit the least.

In comparison to the effects of demand stimulation and increases in protection, ORANI projects that very few industries would reduce their workforces under a general cut in real wage costs. Small reductions are shown for milk products (16), beer and malt (24), tobacco products (26), ready-mixed concrete (57), concrete products (58), the construction industries (84, 85) and retail trade (87). The unfavourable result for milk products reflects the industry's reliance on inputs from the agricultural sector. Under a real wage cut, the prices of all commodities tend to be less than they otherwise would have been. However, for export industries (including agriculture) the price reductions are minimal. Thus, non-export industries with heavy inputs from export industries are comparatively poorly placed. (The maintenance of export prices, combined with reductions in domestic costs, also explains the strong performance of the export industries, particularly industries 1 - 6, 9 - 12, 22, 60, 61.) For beer and malt (24) and tobacco (26) the explanation for the small reductions in employment is found in ORANI's treatment of commodity taxes. Both industries are subject to high sales taxes. In the current specification of the model these taxes

35. The household expenditure elasticities used in ORANI are reported in Tulpule and Powell, op. cit..

and Queensland, whose economies are relatively export oriented, are the major losers from a tariff increase, while Victoria, the home for much of Australia's import-competing industry, is the major winner. In short, the ORANI story on tariff increases is that they are divisive. They help one part of the community at the expense of the rest.

In one respect the industry and regional results for a one per cent increase in real aggregate absorption are similar to those for the tariff simulation. The export-related industries (1 - 6, 9 - 12, 15, 22, 60, 61, 73) are all losers. To the export industries, the domestic demand situation is relatively unimportant. For them, the aspect of the domestic economy which really matters is the cost situation. Under both the 25 per cent tariff increase and the one per cent expansion in aggregate demand the projected increase in domestic costs is about the same, (1.641 per cent and 1.707 per cent, see Table 1). Consequently, according to ORANI, the implications for the export industries of a 25 per cent tariff increase and of a one per cent increase in aggregate demand are almost identical. On the other hand, the implications for some of the import competing industries are quite different. Whereas the textile and footwear industries (28, 29, 36), the chemical industry (47) and the motor vehicles industry (65) were among the winners under a tariff increase, they join the losers under an increase in aggregate demand. For these industries the benefits of a general demand increase are more than offset by the deterioration (because of domestic cost increases) in their competitive position vis-à-vis imports. The main winners from an increase in aggregate demand are the service industries and other industries facing little import competition (e.g. beer and malt (24), tobacco products (26)[34]

34. In the case of tobacco, the import share in the domestic market is quite high. However, legislation ensures that the use of imported tobacco is complementary rather competitive with the domestic product.

Table 2

THE EFFECTS OF ALTERNATIVE MACRO POLICIES AT THE INDUSTRY LEVEL*

Industry		Industry Description	25% Tariff Increase[1]		1% Increase in all Real Absorption[4]		1% Cut in Real Wages[5]		Macro Package[6]	
ORANI No.	ABS IO Code		Emp.[2]	RoR[3]	Emp.	RoR	Emp.	RoR	Emp.	RoR
1	01.01	Sheep	-1.7	- 6.8	-1.7	- 5.1	1.9	4.6	5.9	11.8
2	01.02	Cereal grains	-2.0	- 6.7	-1.9	- 5.3	1.9	4.4	5.5	10.0
3	01.03	Meat Cattle	-2.6	- 9.7	-2.5	- 7.7	2.7	7.5	8.9	21.7
4	01.04	Milk cattle and pigs	-2.1	- 8.9	-2.0	- 6.7	2.4	6.9	8.1	20.9
5	01.05	Poultry	-1.2	- 6.3	-1.0	- 3.6	1.2	3.1	4.1	7.4
6	01.06	Other farming	-1.5	- 5.4	-1.7	- 5.1	2.4	6.5	9.4	23.4
7	02.00	Services to agriculture	- .3	- 2.2	- .4	- .8	.5	.2	1.8	- 1.5
8	03.00	Forestry and logging	- .2	- 2.8	.1	1.2	1.2	4.4	8.0	31.0
9	04.00	Fishing, trapping, hunting	-2.6	-16.7	-2.4	-13.1	2.4	11.8	7.2	30.1
10	11.01	Iron	-1.7	- 6.9	-1.5	- 5.0	1.7	4.4	5.4	10.9
11	11.02	Other metallic minerals	-2.9	-11.3	-2.9	- 9.2	2.9	8.5	8.9	22.8
12	12.00	Coal and crude petroleum	-3.9	-15.1	-3.8	-12.3	4.1	12.2	12.9	36.0
13	14.00	Non-metallic n.e.c.	- .4	- 2.8	1.1	4.2	.6	.5	7.1	16.5
14	16.00	Services to mining	- .3	- 2.9	.8	3.5	.3	- 1.0	4.1	5.4
15	21.01	Meat products	-1.0	- 6.9	- .9	- 3.3	.9	2.1	2.9	2.3
16	21.02	Milk products	.1	- 2.0	.2	1.7	- .0	- 2.4	.5	- 9.1
17	21.03	Fruit and vegetable products	.2	- 1.3	.6	3.8	.1	- 2.1	2.3	- .6
18	21.04	Margarine, oils and fats	.6	- .1	.2	1.9	.5	.0	3.9	6.2
19	21.05	Flour and cereal products	- .1	- 2.7	.1	1.2	.2	- 1.3	1.5	- 4.5
20	21.06	Bread, cakes and biscuits	.0	- 2.3	.2	1.9	.1	- 2.1	1.0	- 6.6
21	21.07	Confectionery products	1.1	2.6	.4	2.7	.3	- 1.0	3.1	2.8
22	21.08	Food products n.e.c.	-3.8	-20.7	-3.1	-13.6	2.7	10.4	6.7	20.1
23	21.09	Soft drinks, cordials etc.	.1	- 1.9	.8	4.8	.1	- 2.0	3.1	3.2
24	21.10	Beer and malt	.5	- .2	1.8	6.0	- .1	- 1.9	4.9	7.5
25	21.11	Alcholic beverages n.e.c.	3.5	9.0	.6	2.5	.4	- .1	4.8	7.2
26	22.01	Tobacco products	.2	- 1.2	1.3	5.6	- .2	- 2.6	2.9	1.9
27	23.01	Prepared fibres	- .1	- 2.7	- .8	- 2.9	.9	2.1	3.1	3.3
28	23.02	Man-made fibres, yarns etc.	4.1	17.4	-1.3	- 5.1	1.9	6.6	7.5	24.4
29	23.03	Cotton, silk, flax yarns etc.	4.5	19.4	- .7	- 2.7	1.4	4.5	6.4	19.2
30	23.04	Wool and worsted yarns etc.	.8	1.9	.4	2.6	.3	- .8	3.1	3.6

* Notes appear at the end of the table. All projections are percentage changes.

Table 2 (contd)

Industry		Industry Description	25% Tariff Increase[1]		1% Increase in all Real Absorption[4]		1% Cut in Real Wages[5]		Macro Package[6]	
ORANI No.	ABS IO Code		Emp.[2]	RoR[3]	Emp.	RoR	Emp.	RoR	Emp.	RoR
31	23.05	Textile finishing	.9	2.5	.5	3.3	.3	- .6	3.8	7.1
32	23.06	Textile floor covering	.8	1.4	1.3	5.8	.6	.4	7.8	21.2
33	23.07	Textile products n.e.c.	1.3	3.1	.2	1.2	1.0	1.7	6.7	14.2
34	24.01	Knitting mills	.8	1.9	.3	2.2	.3	- 1.0	2.5	.8
35	24.02	Clothing	.9	2.4	.2	1.3	.3	- .5	2.4	1.0
36	24.03	Footwear	3.0	8.9	- .2	- .2	.7	.9	3.7	4.9
37	25.01	Sawmill products	.4	.6	.5	3.0	.7	.8	5.8	15.0
38	25.02	Plywood, veneers and boards	1.2	2.2	.9	3.4	.5	- .1	5.8	10.6
39	25.03	Joinery and wood products	.3	- .4	1.2	4.2	.1	- 1.0	4.7	7.4
40	25.04	Furniture, mattresses, brooms	.4	.2	2.1	6.7	.1	- .9	7.5	16.2
41	26.01	Pulp, paper and paperboard	.8	1.1	- .1	.5	1.0	1.9	6.2	13.4
42	26.02	Fibreboard, paper containers	.5	.2	.6	3.1	.4	- .2	4.7	8.3
43	26.03	Paper products n.e.c.	.8	1.2	1.1	4.6	.5	- .0	6.4	14.7
44	26.04	Newspapers and books	- .1	- 1.8	.8	3.7	.5	- .2	6.0	13.2
45	26.05	Commercial and job printing	.5	- .1	.8	3.7	.3	- .5	4.8	8.6
46	27.01	Chemical fertilizers	- .1	- 3.4	- .5	- 1.4	.6	.6	2.3	- 1.0
47	27.02	Industrial chemicals n.e.c.	2.5	12.0	- .8	- 3.5	1.7	7.1	8.0	32.5
48	27.03	Paints, varnishes, lacquers	1.0	2.2	.8	3.5	.3	- .4	4.7	9.0
49	27.04	Pharmaceutical and chemicals	1.0	2.0	.7	3.2	.8	1.1	7.4	17.1
50	27.05	Soap and other detergents	.2	- 1.0	1.6	7.5	.3	- 1.0	6.7	18.0
51	27.06	Cosmetic, toilet preparations	.6	.7	1.9	7.2	.3	- .7	7.9	18.8
52	27.07	Chemical products n.e.c.	1.3	5.4	.1	1.8	.9	2.5	5.8	20.7
53	27.08	Petroleum and coal products	.2	- 1.2	2.2	13.2	.5	- .4	10.3	39.8
54	28.01	Glass and glass products	.9	2.1	.5	2.9	.6	.7	5.5	13.8
55	28.02	Clay products	.3	- .8	.9	3.6	.4	- .3	5.5	9.8
56	28.03	Cement	- .3	- 4.1	1.7	8.5	.3	- 1.0	7.4	21.1
57	28.04	Ready-mixed concrete	.0	- 2.5	2.2	10.6	.2	- 3.1	5.9	14.8
58	28.05	Concrete products	- .0	- 2.9	1.4	7.0	- .0	- 2.5	4.2	7.4
59	28.06	Non-metallic mineral products	.4	- .7	1.0	5.5	.4	- .7	5.5	13.1
60	29.01	Basic iron and steel	-2.4	-15.1	-2.6	-11.7	3.0	12.6	10.2	39.5
61	29.02	Other basic metal products	-3.2	-17.8	-3.3	-14.8	3.3	13.5	9.7	35.6
62	31.01	Structural metal products	.4	- .1	1.1	6.2	.2	- 1.6	4.5	10.3
63	31.02	Sheet metal products	.3	- .8	1.2	6.9	.0	- 2.2	4.1	8.8
64	31.03	Metal products n.e.c.	2.2	8.8	.5	3.1	.7	1.1	5.7	17.1

(industries 1 - 6), fishing (9), the mining industries (10 - 12), the export oriented food processing industries (15 and 22), the mineral processing industries (60 and 61) and the agricultural machinery industry (73). For each of these industries, a 25 per cent across-the-board tariff increase is projected to cause a substantial reduction in employment and to impose at least a 5 per cent reduction in the rate of return. In addition to the export related industries, some lightly protected and non-traded industries also fare poorly under an across-the-board tariff increase. Examples are the food processing industries (16 - 20, 23, 24), newspapers and books (44), soap and other detergents (50), the construction-related industries (55 - 59, 84, 85) and the service industries (86 - 97, 99, 106 - 108).[33] As would be expected, the beneficiaries from the tariff increase are those import competing industries which enjoy high levels of protection in the base period. The tariff increase improves their competitive position vis-à-vis imports and generates import replacement. The textile and footwear industries (28 - 36), the chemical industries (47 - 49, 51, 52), the motor vehicle industry (65), the electrical goods industries (70 - 72) and the miscellaneous group (74 - 80) are all projected to experience increases in both employment and rates of return. Each of these industries either faces relatively severe import competition as indicated by the import share in its domestic market, or has a high base year level of protection. The regional results (Table 3) reflect the industry results. Western Australia

33. Readers may feel that computations of rates of return in such industries as defence (102), education (104), etc. are rather artificial. However, changes in rates of return in these industries can be interpreted as indicating changes in their intensity of capital utilization compared (in the appropriate way) with changes in the costs of creating additional capital.

aggregate real absorption, of a one per cent cut in real wages and of our package, i.e. a 6.15 per cent reduction in all real wages combined with a 3.21 per cent increase in real aggregate absorption.

Probably the most interesting results are those for the macro package. These can be interpreted as referring to the changes in employment and rates of return which would be associated with a macroeconomic recovery, i.e. a situation in which aggregate employment was increased by 5 per cent, the balance of trade was left unaltered and the rate of inflation was reduced. According to Tables 2 and 3, the restoration of macroeconomic health via our package would increase rates of return on fixed capital in all but six industries, increase employment in every industry and have a uniformly stimulatory effect across the states. Thus the results support the theme developed at the beginning of this paper : that many of the problems which might appear to be specific to particular industries and regions are in reality associated with the generally unsatisfactory state of the macroeconomy and that the best form of assistance to ailing industries in Australia's present circumstances would consist of macro rather than micro policy initiatives.

Our emphasis on macro policy is further supported by the industry and regional results for a 25 per cent tariff increase. Micro policy instruments, such as tariffs, tend to relocate structural adjustment problems rather than eliminate them. According to ORANI, a 25 per cent tariff increase (under the assumptions outlined in section 2) would reduce rates of return in 73 out of the 109 input-output industries while employment opportunities would fall in 40 industries and in three of the states. The most adversely affected sectors would be the major export industries and export supplying industries, e.g. the agricultural industries

Table 2 (contd)

Industry		Industry Description	25% Tariff Increase[1]		1% Increase in all Real Absorption[4]		1% Cut in Real Wages[5]		Macro Package[6]	
ORANI No.	ABS IO Code		Emp.[2]	RoR[3]	Emp.	RoR	Emp.	RoR	Emp.	RoR
65	32.01	Motor vehicles and parts	4.8	20.0	- .3	- .4	1.4	4.2	7.7	24.8
66	32.02	Ship and boat building	.2	- .9	.7	4.6	.2	- 1.4	3.3	6.1
67	32.03	Locomotives, rolling stock	- .3	- 3.4	.3	2.4	.3	- .8	2.7	2.7
68	32.04	Aircraft building	.4	.4	.5	3.2	.6	1.2	5.5	17.5
69	33.01	Scientific equipment etc.	.4	- .0	1.0	4.3	.3	- .5	5.1	11.0
70	33.02	Electronic equipment	3.4	11.9	.7	3.8	.8	1.4	7.5	21.1
71	33.03	Household appliances n.e.c.	.8	1.6	1.7	7.6	.1	- 1.6	6.0	14.8
72	33.04	Electronic machinery n.e.c.	1.2	3.0	.7	3.6	.5	.0	5.2	11.6
73	33.05	Agricultural machinery	- .8	- 5.2	- .9	- 3.2	1.1	2.6	3.6	5.5
74	33.06	Construction etc., equipment	.2	- 1.1	.3	2.1	.7	.8	5.1	11.9
75	33.07	Other machinery, equipment	.7	1.0	.3	2.3	.6	.5	4.8	10.6
76	34.01	Leather products	2.2	7.1	.0	.5	.6	.7	3.8	6.1
77	34.02	Rubber products	1.1	3.5	.6	4.9	.6	.4	5.6	18.4
78	34.03	Plastic and related products	1.3	3.1	.6	3.3	.7	.6	5.9	13.9
79	34.04	Signs, writing equipment etc.	1.1	2.2	.6	3.0	.5	.1	5.3	10.5
80	34.05	Other manufacturing	.8	1.4	1.3	5.2	.3	.5	6.1	13.8
81	36.01	Electricity	.0	- 1.8	1.2	7.9	.8	2.1	8.9	38.2
82	36.02	Gas	.2	- .6	1.5	9.7	.4	.5	7.2	28.1
83	37.01	Water, sewerage and drainage	- .0	- 2.2	.7	5.1	.3	- 1.2	3.8	6.3
84	41.01	Residential buildings	.0	- 1.8	1.2	4.4	- .0	- 1.7	3.8	4.0
85	41.02	Building n.e.c., construction	.1	- 1.7	1.2	4.6	- .1	- 2.1	3.0	1.7
86	46.01	Wholesale trade	- .2	- 1.3	.8	2.9	.3	- .3	4.5	7.4
87	48.01	Retail trade	- .1	- 1.2	1.5	5.0	- .1	- 1.4	4.5	7.4
88	48.02	Motor vehicle repairs	- .4	- 2.1	1.4	4.9	.3	- .4	6.4	13.3
89	48.03	Other repairs	- .2	- 1.4	1.2	3.9	.3	- .4	5.4	9.9
90	51.01	Road transport	- .5	- 2.8	.1	.9	.6	.6	4.3	6.6
91	52.01	Railway and other transport	- .6	- 3.1	- .2	- .1	.7	.7	3.5	3.9
92	53.01	Water transport	- .4	- 2.4	- .1	.2	.5	.1	2.7	1.4
93	54.01	Air transport	- .2	- 1.9	1.2	4.3	.5	.2	6.9	14.8
94	55.01	Communication	- .3	- 2.5	1.1	4.0	.5	.2	6.5	14.1
95	61.01	Banking	.1	- .2	1.6	3.1	.3	- .1	5.2	9.4
96	61.02	Finance and life insurance	.0	- .4	1.5	4.5	.3	- .1	6.8	14.2
97	61.03	Other insurance	.0	- .4	1.1	3.5	.3	- .1	5.7	10.9
98	61.04	Investment, real estate etc.	.1	.1	1.2	3.3	.4	.3	6.4	12.6

Table 2 (contd)

Industry		Industry Description	25% Tariff Increase[1]		1% Increase in all Real Absorption[4]		1% Cut in Real Wages[5]		Macro Package[6]	
ORANI No.	ABS IO Code		Emp.[2]	ROR[3]	Emp.	ROR	Emp.	ROR	Emp.	ROR
99	61.05	Other business services	-.0 - .9		.9	3.0	.3 - .2		4.9	8.3
100	61.06	Ownership of dwellings	.1 - .0		1.6	4.7	.5 - .6		8.3	18.7
101	71.01	Public administration	.0 - .2		1.0	3.7	.0 - 1.3		3.3	3.8
102	72.01	Defence	.0 - .2		1.0	3.3	.0 - 1.0		3.1	4.1
103	91.01	Health	-.0 - .2		1.4	4.6	.3 - .1		6.1	14.0
104	82.01	Education, libraries, etc.	.0 - .2		1.1	3.9	.1 - .8		4.2	7.7
105	83.01	Welfare services	.0 - .8		1.1	4.1	.2 - .7		4.7	8.8
106	91.01	Entertainment	-.3 - 1.6		1.4	4.5	.4 - .1		6.8	13.8
107	92.01	Restaurants, hotels, clubs	.1 - .7		1.4	6.5	.2 - .8		5.7	15.8
108	93.01	Personal services	-.0 - .9		1.5	4.8	.4 - .2		7.2	14.4
109	99.01	Business expenses	.1 .2		.6	1.7	.2 - .1		3.4	5.0

1. These computations give the industry results for experiment I, Table I , i.e., the 25 per cent tariff increase is imposed in an environment of fixed capital stocks, fixed exchange rate, fixed rea: wages and fixed aggregate absorption.
2. Emp. is employment calculated in weighted labour hours. In calculating the percentage change in employment in industry j, we weight the percentage changes in employment in each occupation in industry j by their shares in j's total wage bill.
3. RoR is rate of return on fixed capital, i.e. profits (after depreciation and allowance for costs of holding working capital) as a percentage of the replacement value of fixed capital.
4. These computations give the industry results for experiment II, Table I, i.e., the 1 per cent increase in absorption is imposed in an environment of fixed capital stocks, fixed exchange rate and fixed real wages.
5. These computations give the industry results for experiment IV, Table 1, i.e., the 1 per cent real wage cut is imposed in an environment of fixed capital stocks, fixed exchange rate and fixed aggregate absorption.
6. These computations give the industry results for experiment V, Table 1 , i.e., the 3.21 per cent expansion in absorption combined with the 6.15 per cent reduction in real wages takes place in an environment of fixed capital stocks and fixed exchange rate.

improved economic conditions associated with an initial cut would increase business confidence and accelerate the rate of accumulation of capital. If that happened, then there would be an increase in the level of real wages which was consistent with full employment, thus limiting the required reduction in the actual level of real wages.

The second point concerns wage relativities. For good humanitarian reasons, policy makers, if convinced that wage cuts are required, might be tempted to introduce them at the top. For example, the policy of "plateau indexation" seems to be motivated by :

> "an admirable philosophy of egalitarianism. But who benefits? The unskilled and young people that actually keep their jobs are made more equal with the skilled and with adults. But what about the unemployed".[32]

The point is that by cutting real wages we are attempting to increase employment. For this purpose it does not make sense to concentrate the wage cuts on the strongest part of the labour market. Questions of income distribution and equity are best handled by tax-transfer policy, not by policies which interfere with the relative costs of employing different categories of labour.

5. The Industry and Regional Implications of Alternative Macro Policies

Tables 2 and 3 extend the results from columns I, II, IV and V in Table 1. They show the industry and regional implications of a 25 per cent increase in all tariffs, of a one per cent increase in

32. Corden, op. cit., p. 32.

labour. It must not be eroded by increased non-wage elements (workers compensation, payroll taxes, etc.).[31]

Our expectation is that if there were a significant reduction in the real costs of employing labour, then the second part of our package (i.e. the increase in aggregate demand) would not provide a difficult policy problem. In fact, for the reasons outlined above (i.e. the effects of cuts in real wages on profits and investment, the effects on the income of the formerly unemployed and the effects on household savings behaviour) little explicit stimulatory action may be required. However, in the last section we argued that reductions in real wages would move the balance of payments towards surplus. As the surplus appeared, a favourable situation would develop for government initiatives of the Keynesian type, e.g. cuts in income tax, increases in government expenditure, etc.

Two final points should be emphasized. First, we would not support an immediate attempt to reduce real wages by the full 6.15 per cent indicated by our package. We would prefer a smaller reduction, say 3 per cent. Although we have argued that cuts in real wages, even in the absence of stimulatory government action, may increase aggregate demand, there can be no certainty on this point. By starting with only a small reduction in real wages, we can limit the size of any budgetary problems which might be associated with maintaining aggregate demand. When employers have had time to take advantage of the initial wage cut, then further wage cuts could be introduced if required. With luck, however, further wage cuts would not be required. We expect that the

31. Snape, op. cit., p. 40 produces figures showing that "average adult award minimum wages plus other labour costs deflated by the non-farm G.D.P. deflator" have continued to increase despite partial wage indexation.

Table 3

EMPLOYMENT RESULTS AT THE STATE LEVEL OF ALTERNATIVE MACRO POLICIES[1]

Region	25% Tariff Increase[2]	1% Increase in all Real Absorption[2]	1% Cut in Real Wages[2]	Macro Package[2]
NSW (incl. ACT)	.06	.75	.43	5.06
VIC	.53	.78	.38	4.82
QLD	-.70	.25	.76	5.48
SA (incl. NT)	.25	.75	.40	4.87
WA	-.60	.42	.56	4.79
Tas.	-.22	.53	.53	4.92
Australia[3]	.05	.66	.47	4.97

1. All projections are in percentage changes. The state results were derived from the national results by applying the method described in Peter B. Dixon, B.R. Parmenter and John Sutton, "Spatial Disaggregation of ORANI Results : A Regional Balance Method", Impact of Demographic Change on Industry Structure in Australia, Preliminary Working Paper No. OP-19, Industries Assistance Commission, Melbourne, February, 1978 (forthcoming in Economic Analysis and Policy). In terms of that paper, the computations reported here were made with $\gamma = 1$, i.e., the computations take into account both variations across the states in the industrial composition of their economic activity and the multiplier effects arising from the relationship between state incomes and the level of state consumption.

2. As in Table 2, these computations extend the results for experiments I, II, IV and V of Table 1 (see notes 1, 4, 5 and 6 at the end of Table 2).

3. There are minor differences between the results in the last line of this table and those for experiments I, II, IV and V in the first line of Table 1. Different weighting schemes were used in the two tables to compute the percentage change in aggregate employment from the percentage changes in occupational employment.

significant long-run social costs by inducing a misallocation of resources. Our concern here is with the comparatively short-run question, i.e. employment creation. (On the long-run question, i.e. the size of the welfare costs of protection, there are a variety of opinions. A recent survey is Dixon [June 1978].[11])

According to the ORANI projections, a general increase in protection (under conditions of fixed real wages, fixed aggregate absorption and a fixed exchange rate) will, over one or two years, have a small negative effect on aggregate employment. In Table 1, column I,[12] we see that a 25 per cent increase in all tariffs induces a .001 per cent reduction in employment. ORANI suggests that gains in job opportunities for those occupations (especially Skilled blue collar -- metal and electrical) employed intensively in heavily protected import competing industries are more than offset by falls in employment in other categories (especially Rural workers).

It is not necessary to believe the exact figures in column I in order to believe their overall implication. We certainly would agree that changes in ORANI's parameter values, within the ranges consistent with existing statistical observations, could easily reverse the sign of the aggregate employment effect. We believe that it is realistic, however, to interpret the ORANI result as meaning that general changes in protection are likely to have only a small (either positive or negative) impact on

11. See P.B. Dixon, "Economies of Scale, Commodity Disaggregation and the Costs of Protection", Australian Economic Papers, Vol. 17, June 1978, pp. 63-80.

12. This particular simulation of the effects of a tariff increase is described in greater detail than is possible here in Dixon, Parmenter, Ryland and Sutton, op. cit., ch. 4.

the government should aim to reduce the real costs of employing labour (a critical variable in determining how much labour will be employed) while simultaneously maintaining the real level of household expenditure (a critical component of aggregate demand). Of course, care must be taken not to aggravate the government's budget deficit. If it were necessary to compensate households for a sharp reduction in real wages by a large reduction in income tax, then the government could be faced with an unmanageable budget deficit. Whatever benefit might flow from the reduction in real wages could then be lost through inflationary devaluations triggered by the response of international capital flows. The problem is that :

> "Difficulties arise when although the deficit is not excessive in the prevailing circumstances, financial markets and public opinion in general associate a large deficit with the likelihood that inflation will re-accelerate later on. In this case, the authorities may be faced by the extremely uncomfortable dilemma that either the deficit is too small to support a sustained recovery, or it is too large to be financed in ways which will not tend to rekindle inflation once the recovery gets under way."[30]

This suggests that there are no soft options. The safest way to implement our package (reduced real wage costs and increased absorption) is to work on real wages first. There must be an initial small reduction in real wages, say 3 per cent or about half of what might be the eventually required reduction. This reduction in real wages must represent (and be seen by employers to represent) a genuine reduction in the real costs of employing

30. P. McCracken, et. al, (The McCracken Report), op. cit., p. 197.

accepted, then it follows that a reduction in unemployment and inflation, via a reduction in real wages, could stimulate aggregate household expenditure by reducing the average propensity to save. It also follows that the standard of living need not fall, even of those who are employed before the reduction in real wages. (It is clear that the standard of living of formerly unemployed people who find a job at the lower real wage will be raised.) An improved macroeconomic situation allows households to maintain a given level of consumption on a reduced level of real income.

(iv) Most importantly, the argument ignores the fact that governments have freedom to manipulate aggregate demand independently of real wage rates. As Professor Gruen puts it :

> "Aggregate demand is subject to control through other instruments : in particular fiscal and monetary policy. These can operate much more directly on aggregate demand than wage policy."[28]

The same point is made by Professor Corden :

> "It must be remembered that fiscal and monetary policies can make aggregate demand whatever the government wants it to be, allowing for time lags."[29]

If the time lags mentioned by Corden are a problem, then governments can adjust payroll and income taxes so that real take-home pay is unaltered while the real costs of employing labour are reduced. That is,

28. F.H. Gruen, op. cit., p. 80.

29. W.M. Corden, op. cit., p. 27.

aggregate employment. Although protection can save jobs in import competing industries, it simultaneously destroys jobs in export industries and industries supplying export industries (see Table 2 and the analysis in section 5). Protection of import-competing industries imposes cost increases on the rest of the economy. Notice in Table 1, column I that we estimate that a 25 per cent tariff increase adds 1.641 per cent to the consumer price index.[13] Under full wage indexation, this adds 1.641 per cent onto the wage bills of all industries.[14] Compared with domestically oriented industries, export and export related industries relying on world markets are poorly placed to pass on cost increases. The cost squeeze effect on the export industries is reflected by our estimate that under the influence of the 25 per cent tariff increase, total exports fall by 1.863 per cent. It is interesting that this reduction in exports is sufficiently large for the simulated net effect of uniform increases in protection to push the balance of trade only slightly towards surplus.

(b) The Macro Impact of Demand Stimulation

Until quite recently students were graduating from economics courses secure in the idea that macro policy was principally a matter of demand management. The Keynesian orthodoxy was that aggregate employment could be adjusted by changes in government expenditure, changes in taxation policy and variations in interest rates. The main limitation to employment creation via demand stimulation was seen to be the impact

13. The increase in the capital goods price index is even higher. The capital goods price index includes a comparatively heavy weighting on protected imports.

14. As well as increased wage costs, protection imposes increased materials costs. This idea is emphasized in the "effective protection" literature and also plays a significant role in the ORANI computations.

on inflation as the economy neared full employment. It was expected that shortages of particular types of labour and materials could lead to general price increases before full employment was reached in all occupations.

Experience of the seventies has shown that in the contemporary economic environment, demand stimulation may not be a satisfactory approach to employment creation and that the supposed trade-off between employment and inflation may no longer apply.[15] One rarely sees a pronouncement by a Finance Minister or his advisers which does not stress the need for a cautious approach to demand expansion. With unemployment running at higher levels than at any time since the nineteen-thirties, to the pure Keynesian this emphasis on caution may seem to be misplaced.

Some of the difficulties with implementing a recovery policy based primarily on demand stimulation are illustrated by the two ORANI simulations in columns II and III of Table 1. Column II shows the effects of a balanced one per cent increase in aggregate real absorption, i.e. a one per cent increase in real private consumption and investment expenditure and a one per cent increase in all categories of government expenditure.[16] Column III gives results for a one per cent increase in real government expenditure alone.

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15. Some economists still cling to the notion of a Phillips curve : they just argue that it is subject to large shifts and occasionally slopes the wrong way.

16. In terms of the ORANI notation, the computations were run with the $c_R=i_R=1$. In view of the model equations (7.1) and (7.2), the $f^{(5)}$'s were set at zero, as were all the other exogenous variables. The exogenous/endogenous split is given in Table 5 in the appendix or in Table 3 of Dixon, Parmenter, Ryland and Sutton, op. cit..

(ii) It ignores the impact on consumer demand of the earnings of those who, being initially unemployed, can find a job at a lower real wage.

(iii) It ignores the impact of increased aggregate employment and reduced inflation on the average propensity to consume. Over the seventies, households spent a significantly reduced share of their disposable income -- whereas the average savings ratio for the four years ending June 1972 was 9.1 per cent, in the four years ending June 1976 the corresponding figure was 15.3 per cent. Why, in view of the rapid depreciation in the real value of money, did households choose to save more? Detailed research at the household level has not been done in Australia on this (or virtually any other) question relating to the motivation behind consumers' actions. However, two factors likely to be important in the explanation can be identified. First, the accelerated inflation of the 1970's led to large reductions in the real value of the stock of households' savings. In an attempt to mitigate this decline households apparently chose to save a larger proportion of current income. To consider but a single category of savers, namely, those attempting to bridge the deposit gap on the purchase of a first home, accelerated savings was clearly a necessity if their goal were not to be abandoned. Second, the high inflation was accompanied by a much higher risk of unemployment. Households' savings are used partly to tide workers and their dependants over periods of lay-off. Given that this risk became higher in the mid seventies, households had an additional reason for saving. If these arguments are

(iii) A slow down in the rate of investment (and growth of capital) associated with reduced confidence concerning the future political, social and economic environment ;

(iv) Deterioration in industrial relations ;

(v) Increased costs of hiring and firing. Increased costs of worker benefits (holiday pay, worker compensation for injury, etc.).

Of course, policies aimed at increasing business confidence, at improving industrial relations and at persuading Australia's trading partners to be less protectionist could all play a useful role in improving the employment situation while limiting the required reduction in real wages. Our view, however, is that increased flexibility in the overall level of real wages and of wage relativities will be necessary for improved employment performance. In summary,

> "Real wages are important for unemployment."
> Corden, op. cit., p. 30.

4. The Implementation of Macroeconomic Recovery

Is our emphasis on real wages misplaced? What about the often repeated argument that cuts in real wage income would have disastrous consequences on economic activity as a result of the severe contraction of demand that it is alleged would follow. It seems to us that this argument is wrong for several reasons :

(i) It ignores the effects of reduced real wages on profits and the consequent implications for investment demand and consumption expenditure by profit earners.

In column II we see that, according to ORANI, general demand stimulation can be a very expensive method (in terms of inflation and balance of payments problems) of creating additional jobs. Under fixed real wages, a .577 per cent increase in employment is bought at the cost of an increase of 1.707 per cent in the consumer price index and an addition to the balance of trade deficit worth 3.9 per cent of total exports.[17] Obviously, if these calculations are anywhere near the truth, general demand stimulation cannot, by itself, provide a feasible approach for a return to full employment from a situation of say 5 per cent unemployment.

What aspects of the ORANI model are responsible for these rather pessimistic results? Our overall hypothesis about the behaviour of producers is that they will respond to demand increases with an increase in output and employment only if the demand increase allows an improvement in their price/cost situation. With full wage indexation, prices and costs tend to move together and for the typical firm there is no incentive for expanded operations. In fact, the typical firm may never "notice" the increase in demand. Price increases for domestic goods keeping pace with cost increases or cost increases keeping pace with price increases -- will shift demand away from domestic producers towards imports. Thus, under full wage indexation, we can expect a major part of any increase in aggregate demand to be satisfied by imports. (Notice in column II that imports are shown as increasing by 1.815 per cent.) Also, we can expect general demand stimulation (under conditions of full wage indexation) to reduce job opportunities in those industries which are

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17. $B.144 is about 3.9 per cent of exports in the model's base year.

unable to pass on cost increases. Export industries are particularly adversely affected. On the one hand, they are caught by a cost squeeze induced by higher money wages. On the other, since they rely on overseas demand, domestic demand stimulation provides them with few additional sales opportunities. In section 5 we will be giving further consideration to the effects of domestic demand stimulation on the economy's industrial structure. For the present, we note that column II shows large reductions in aggregate exports and in the employment of rural workers. A final comment on column II concerns exchange rate policy. Would it be possible to mitigate the adverse effects of demand stimulation on exports and the balance of trade by simultaneously devaluing the currency? Chapter 4 of Dixon, Parmenter, Ryland and Sutton, op. cit., contains a detailed description of an ORANI simulation of the effects of a devaluation. Very briefly, the conclusion was that a devaluation can only increase the level of employment if it induces a reduction in the real rate of payment to at least one of the factors of production. With fixed real wages, we could expect that a devaluation, superimposed on a general stimulation of demand, would merely increase the rate of inflation. The additional inflation would quickly eliminate any initial improvement on the balance of trade or any advantage offered to the traded-goods industries.

Unlike the results for a general demand stimulation (column II), the results in column III show highly favourable trade-offs between employment creation, inflation and the balance of trade. In column III we see that a one per cent real increase in all categories of government expenditure (with real private expenditure and real wages fixed) implies a .158 per cent increase in employment with little inflationary effect (.056 per cent) and only a minor deterioration in the balance of trade

In the McCracken Report we have :

> "The route to sustained full employment lies in recognizing that governments cannot guarantee full employment regardless of developments in prices and wages. During the course of the great post-war expansion, those responsible for price-setting and wage-bargaining increasingly behaved as if there was no way in which they could price themselves out of markets or jobs. The 1974-75 recession has been a painful revelation, ..."[26]

However, even if Australia's unemployment has not been caused by excessive increases in real wages,[27] to cure the problem it may nevertheless be necessary to reduce real wages. It is easy to make a long list of reasons why the full-employment level of real wages for some (or all) groups of workers may, at times, fall. Among the reasons which might be relevant in Australia today are :

(i) Adverse movements in the terms of trade, including the effects of protectionist policies by importers of Australian products ;

(ii) Demographic and social factors causing an acceleration in the growth of the workforce relative to the economy's capital stock ;

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26. See McCracken, et. al, Towards Full Employment and Price Stability, OECD, 1977, p. 18.

27. Dr Sheehan (see P. Sheehan, "Real Wages and Unemployment : An Alternative View", in M.R. Fisher, et. al, op. cit.), for example, denies the existence of wage overhang, i.e. he argues that increases in real wages have not been excessive in relationship to productivity growth. While we do not take a position on the validity of Sheehan's statistics, we do question their relevance. During a period in which excessive real wage growth was causing unemployment, average productivity could be either increasing or decreasing relative to real wages. "This historical real overhang approach is unsatisfactory because it concerns itself with averages, whereas the relevant magnitudes are, of course, marginal costs and productivities." Gruen, op. cit., p. 70.

(about 0.3 per cent of exports).[18,19] On making the obvious multiplications, it might appear that with a sufficient increase in government expenditure, we could eliminate 5 per cent unemployment at a cost of a 1.77 per cent increase in the consumer price index and a deterioration in the balance of trade worth approximately 9.5 per cent of exports.[20] What makes such an approach to employment creation impractical is the size of the required increase in government expenditure. It would need to be 5/.158, i.e. 31.65 per cent. Quite apart from questions about the feasibility of framing monetary and fiscal policies which would allow such massive changes in government expenditure while fixing real private expenditure and real wages, there is the question of long-run resource allocation. A policy based on engaging people in public employment, not in response to demands for public services but merely from the point of view of creating jobs, can be enormously wasteful of human effort.

(c) The Macro Impact of a Cut in Real Wages

A glance at Table 1, column IV confirms that, according to the present ORANI simulations, real wages are the key to macroeconomic recovery. A one per cent reduction in real wages leads to a .514 per cent increase in employment, an improvement in the balance of trade and a

18. $B.011 is about 0.3 per cent of exports in the model's base year.

19. In these simulations, short-run expansions of public services increase unit costs, just as short-run expansions in private production activities increase unit costs. However, unit costs (or "prices") of public services (defence, public administration, etc.) do not enter the ORANI consumer goods price index and do not flow on to wages.

20. Note that $5.0/.158 = 31.65$ and $31.65 \times .056 = 1.77$ and $31.65 \times 0.3 = 9.5$.

a little experimentation, it becomes obvious that there is no plausible package which (a) generates a substantial well-balanced increase in employment, (b) involves no serious balance of trade problem and (c) does not involve a cut in real wages. The message from Table 1 is quite clear : cuts in real wages costs combined with a moderate expansion in aggregate demand offer Australia the best possibility for a non-inflationary return to full employment.

Our concluding point for this subsection concerns causes and cures. It has been argued by many writers[24] that increases in real wages have been an important cause of unemployment. For example, Professor Snape puts the case persuasively as follows :

> "To those who are accustomed, following Keynes, to play down the role of real wages, I pose a question. Suppose an economy is operating near full employment and for some reason (e.g. the conditions of 1973-74 Australia) real wages increase significantly ahead of growth of output per employee, and are retained at their new, higher level; what is likely to happen to employment? Unless there was a sizable economic "surplus" in the profits earned prior to the real wage increase I find it difficult to conceive of circumstances in which one might argue that "full" employment would continue."[25]

24. See, among others, R.H. Snape, "Comment", Economic Papers, No. 56, October 1977; W.M. Corden, "Macro-Economic Policy Options for Australia", Economic Papers, No. 56, October 1977; F.H. Gruen, "Some Thoughts on Real Wages and Unemployment", in M.R. Fisher, et. al, Real Wages and Unemployment, CAER Paper, No. 4, March 1978; D.W. Stammer, "Real Wages and Unemployment", in M.R. Fisher, et. al, op. cit.; and P.B. Dixon, B.R. Parmenter and J.M. Sutton, "Some Causes of Structural Maladjustment in the Australian Economy", Economic Papers, No. 57, January 1978.

25. Snape, op. cit., p. 38.

reduction in consumer prices.[21] If we were to eliminate 5 per cent unemployment by real wage cuts alone, then the required reduction would be 9.7 per cent, i.e. 5/.514. This, however, would induce an improvement on the balance of trade worth about 20 per cent of exports.[22] Such a movement towards balance of trade surplus would, undoubtedly, be considered unnecessary and undesirable. It could be eliminated by an overall increase in absorption. For example, if we increase absorption by 3.21 per cent and reduce real wages by 6.15 per cent, then the results in Table 1, column V imply a 5 per cent increase in employment with no change on the balance of trade and a 1.40 per cent reduction in the consumer price index.

Column V was derived from columns II and IV by computing

$$\text{Column V} = 3.21\ \text{Column II} + 6.15\ \text{Column IV} \quad .$$

The coefficients 3.21 and 6.15 were chosen from the two instrument, two target problem :

Find α , the percentage change in real absorption, and
β , the percentage reduction in real wages, to satisfy
$.577\alpha + .514\beta = 5$ (5 per cent increase in employment) ,
$-.144\alpha + .076\beta = 0$ (zero change on the balance of trade) .

21. Column IV does not imply a negative rate of inflation. It means that if real wages are decreased by one per cent (without the decrease being allowed to affect real absorption or the exchange rate) then after about one or two years the price level will be 1.118 per cent less than it otherwise would have been.

22. \$B.076 × 9.7 = \$B.739 . This represents about 20 per cent of exports in the model's base year.

Alternatively, we could consider real wage cuts combined with increases in real government expenditure, holding private absorption fixed. Then the two instrument, two target problem becomes :

Find γ , the percentage change real government expenditure,
and δ , the percentage reduction in real wages, to satisfy
$.158\gamma + .514\delta = 5$, $-.011\gamma + .076\delta = 0$,

where the coefficients in these equations are read from columns III and IV of Table 1. In this problem, the answer is

$$\gamma = 21.5$$
$$\delta = 3.1 \ ,$$

i.e. a 21.5 per cent increase in real government expenditure combined with a 3.1 per cent reduction in real wages will (in an environment where real wage cuts and variations in government expenditure are not allowed to affect real private absorption) increase employment by 5 per cent while having zero impact on the balance of trade. Compared with the previous package (3.21 per cent increase in aggregate real absorption and 6.15 per cent cut in real wages) this last package has the advantage of involving a smaller wage cut. On the other hand, it implies a very unbalanced stimulation of the economy with a disproportionate share of the additional employment being created in the public sector. The reader will certainly be able to think of other packages which, according to Table 1, imply a 5 per cent increase in employment without a balance of trade problem. Some of the more interesting may involve tariff cuts.[23] However, after

23. Tariff cuts might play a particularly important role in a package designed to control inflation.