Australian
nomic Review
Quarter 1988

Analysis of the 1988-89 Budget
Conference Papers on Poverty, Wealth and Income Distribution

3'88

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d by Australia Post — Publication No. VBP 0519

Structural Reform, Macro Policies and Income Distribution

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Abstract

Since the mid-1980s, Australia has been under considerable pressure to restructure its economy. This restructuring has been necessitated by the need to generate surpluses in its external trade account in order to meet the growing interest payments on its foreign debt. To facilitate this process of restructuring, the Commonwealth Government initially used two macro policies that have the desired structural effects: 'wage moderation' and 'fiscal management'. In this paper, we examine the distributional effects of these policies. The analysis depends on simulations using an extended version of the ORANI model of the Australian economy, taken in conjunction with unit record data from an updated version of the 1981-82 Income and Housing Survey database.

1. Introduction

Since the mid-1980s, Australia has been under considerable pressure to restructure its economy. This restructuring has been necessitated by the need to generate surpluses in its external trade account in order to meet the growing interest payments on its foreign debt. Since the end of 1980, Australia's international debt has grown from 6.5 per cent of GDP to about 30 per cent currently.

The process of debt accumulation started with the large balance of trade deficits of the early 1980s. Subsequently, debt accumulation has been fuelled by interest payments. To prevent these interest obligations from resulting in ever-increasing, unsustainable levels of foreign debt, it will be necessary to increase export revenue and/or to reduce the import bill, and to use the surplus thus generated to pay the interest owed on the debt.[1] To bring about this adjustment, Australia will be forced to allocate a higher proportion of its resources to the traded goods sector, at least for the next 3 to 5 years. This is likely to be the main source of pressure for structural adjustment in the immediate future.

To facilitate this adjustment process, the Commonwealth Government initially used two macro policy instruments which have the desired structural effects. Firstly, it reduced the rate of growth of its own spending for three consecutive years, resulting in a 4.5 per cent cut in real government spending between 1985-86 and 1988-89. Secondly, it pursued a wages policy, via its accord with the trade union movement, that produced a 3.6 per cent fall in the average real wage rate between 1983 and 1987. More recently, the government has shifted the focus of its policy response from the macro to the micro economy. Hence, in the 1988 May Economic Statement, it announced a host of micro policies such as tariff reform, industrial deregulation, etc., that are designed to create an economic environment in which structural adjustment can take place (Keating 1988).

In this paper, we concentrate on the economic effects of the two macro policies adopted for structural reform: 'wage moderation' and 'fiscal management'. We examine the mechanisms by which they reallocate resources in the required direction, and their relative effectiveness in doing so. Our main concern, however, is with their distributional implications: who bears the burden of adjustment under each policy? The reason we concentrate on the macro policies is that in earlier studies of specific structural changes, such as a terms of trade deterioration (Agrawal and Meagher 1987) or a reduction in tariffs (Agrawal and Meagher 1988a), we found that the distributional effects of such shocks are dominated by the assumptions made about the macro scenario, in particular by the real wage and fiscal assumptions. Here, we want to highlight the effects of these key policy instruments.

The analysis in this paper depends on simulations using an extended version of the ORANI model of the Australian economy, taken in conjunction with an updated version of the 1981-82 Income and Housing Survey (IHS) database. Details of the simulations are specified in Section 2 of the paper. Section 3 contains a brief analysis of the macro results. The methodology for interfacing the ORANI-NAGA model with the IHS database is described in Section 4. The distributional results are presented in Section 5. Finally, Section 6 concludes with a discussion of the policy implications of the study.

2. Methodology

2.1 *The Model*

The ORANI multisectoral model of the Australian economy is well known, having been applied by many users to a wide range of policy issues.[2] The standard version of the model is comprehensively documented in Dixon *et al.* (1982). In recent applications, it has often been augmented with a system of equations designed to describe the national and government accounts. This extension, referred to as the NAGA model, is specified in Meagher and Parmenter (1985, 1987). A record of the relevant ORANI database can be found in Blampied (1985), while the NAGA database used in our simulations is listed in Agrawal and Meagher (1988a).

To generate our distributional results, we first compute solutions to the combined ORANI-NAGA model to determine the effects of the policy changes on a range of macro and structural variables of the economy.[3] A selection of these variables (concerning employment, factor prices and commodity prices) is then used to revise the incomes and population weights of all the income recipients identified in the IHS unit records. Finally, we compute distributional statistics from the revised (post-shock) records and compare them with the corresponding statistics computed from the original (pre-shock) records. This methodology is described in Section 4.

The pre-shock records themselves are derived from the 1981-82 IHS unit record data by updating weights and incomes to conform to historical values for 1984-85.[4] In particular, the population weight attached to each individual in the database is adjusted to reflect the numbers belonging to various employment status categories. Further, individuals' incomes from each source are adjusted so that they sum to aggregate values of the corresponding income types obtained from the national accounts. The latter process also involves imputing income from sources not identified in the IHS such as interest from life insurance and superannuation funds, rent from owner-occupied housing, and returns to agricultural land.[5]

Finally, it should be noted that we operate our model as a tool of comparative static policy analysis (rather than forecasting). As with any comparative static analysis, our results do not represent the actual evolution of the economy. Rather, they give a broad picture of how much difference the policy change would make to the economy after about two years of adjustment.

2.2 *The Economic Environment*

In the following sections, we report results for two simulations. The assumptions underlying both simulations are[6]:

(i) labour markets are slack, that is, employment is demand determined in every occupational category;

(ii) industry-specific land and capital in use are exogenous;

(iii) real private absorption varies with real private disposable incomes;

(iv) the shares of real private consumption and real private investment in total real private absorption remain unchanged;

(v) real public investment varies with real private investment, that is, the shares of the public and private sectors in aggregate investment remain unchanged;

(vi) the nominal exchange rate is exogenous; and

(vii) all tax rates are exogenous and remain unchanged in real terms.

Assumption (i) is descriptive of the Australian labour market in its present state, where there are high rates of unemployment at the going real wage rates. Assumption (ii) means that the results are short run[7] and hence there is insufficient time to change the quantity of land and fixed capital available for use by each industry. Assumptions (iii) to (v) indicate that aggregate real private absorption, as well as real private invest-

We are grateful to Brian Parmenter and Alan Powell for their helpful comments on an earlier draft of this paper. Support from the Australian Research Grants Scheme is also gratefully acknowledged.

1 According to Dixon and Parmenter's (1988) most recent forecasts for the Australian economy, even if the balance of trade deficit declines at an annual rate of 0.5 per cent of GDP between 1986-87 and 1991-92, the debt to GDP ratio is likely to exceed 40 per cent by 1992.

2 For a recent review of this experience, see Powell and Lawson (1986).

3 The equations of the ORANI model are implemented and solved using the GEMPACK general purpose software system for CGE models (Pearson 1986). The process of solving the linear equations uses the Harwell sparse matrix code (Duff 1977).

4 The updating procedure is described fully in Agrawal and Meagher (1988b)

5 These imputations were undertaken to make the IHS database conceptually consistent with the national accounts data underlying ORANI. They are described in Agrawal (1987a).

6 A complete list of the variables selected as exogenous is given in Table A1 of the Appendix in Higgs (1988).

7 The duration of the ORANI short run has been estimated to be about two years (see Cooper, McLaren and Powell 1985).

ment and real public investment, are all endogenously determined in both simulations. Assumption (vi) reflects our choice of the numeraire. Under the conditions of our simulation, movements in the nominal exchange rate do not affect any real magnitudes. Instead, they translate into one-to-one movements in the absolute domestic price level. Finally, assumption (vii) states that the tax policy remains unchanged in both simulations. It also explicitly rules out any changes in real government tax revenue due to changes in inflation. In the calculation of personal income tax payments, all tax rates are held fixed and all tax brackets are indexed to the CPI. Given that the choice of the numeraire in our model is arbitrary, it is important to ensure that movements in the absolute domestic price level do not exert any influence on real variables in the model.

2.3 The Simulations

We examine the effects of two macro instruments that can each be used to achieve our policy target of generating a balance of trade surplus. These instruments are: the real wage rate and the level of real government spending. Table 1 examines the effects of a one per cent cut in each of these variables. Column 1 reports the effects of a one per cent cut in the average real wage rate, keeping real current government spending and all other exogenous variables constant. Column 2 reports the effects of a one per cent cut in real current government spending, keeping the real wage rate and all other exogenous variables constant. Note that of the various components of aggregate government expenditure, it is only the current government spending on goods and services that is exogenous in both simulations; government expenditures on public investment and transfer payments are endogenously determined in both simulations.

Table 1 reveals that both policies have the desired effect of moving the balance of trade towards a surplus. The wage cut, however, generates a significantly larger surplus (0.30 per cent of GDP) than the fiscal cut (0.13 per cent of GDP). The mechanisms generating these results are discussed fully in Section 3.

Since the model is solved in a linearised form, the results presented in Table 1 can be scaled to obtain the size of the policy change required to attain any targeted change in the balance of trade surplus. Suppose that we set a policy target of generating a balance of trade surplus equal to, say, one per cent of GDP. Since a one per cent cut in the real wage rate generates a surplus equal to 0.2964 per cent of GDP, a surplus of one per cent of GDP could be attained by a 3.37 per cent cut in the real wage rate. Similarly, Table 1 indicates that the same target can also be achieved by a 7.84 per cent cut in real current government expenditures.

In the following sections, we use the policy targets and instruments discussed above as the basis of our two simulations. Briefly, our target is to achieve a balance of trade surplus equal to one per cent of GDP. Under Simulation I, this is achieved by a 3.37 per cent cut in the average real wage rate. Under Simulation II, the same target is achieved instead by a 7.84 per cent cut in real current government expenditures.

Table 1 Projected Effects of Wage Cuts and Fiscal Cuts on the External Trade Account

Variable	Simulation I (wage policy)	Simulation II (fiscal policy)
Policy instruments		
1. Percentage change in the average real wage rate (CPI deflated)	−1.00	0.00
2. Percentage change in real current government expenditures	0.00	−1.00
Policy target		
Balance of trade surplus (as a percentage of GDP)	0.2964	0.1275

3. Macro Results

Table 2 contains the macro effects of the two simulations. It reveals that the mechanisms generating the balance of trade surplus are quite different in the two cases. The wage cut policy operates primarily by stimulating exports, which rise by 5.8 per cent. This strong growth in exports is due to the improved competitiveness of exporters arising from the reduction in labour and material costs (the CPI falls by 3.4 per cent). The policy, however, has a relatively minor effect on imports (−0.4 per cent). This is because, under this simulation, though there is a tendency for imports to fall as buyers substitute away from imports towards the now relatively cheaper domestic substitutes, there is an offsetting tendency for imports to rise as GDP rises (2.5 per cent).

The cut in government expenditure, on the other hand, has a more balanced effect on exports and imports. Because the policy is deflationary (the CPI falls by 2.8 per cent), it also reduces costs of production and improves the competitiveness of the traded sectors. Since nominal wages fall by less than in Simulation I, however, the fiscal cut has a smaller effect on exports. Thus, exports now rise by only 3.2 per cent. The impact on imports is stronger in this case since instead of offsetting each other, the substitution and income effects reinforce each other. As a result, imports fall by 2.7 per cent.

While the wage and fiscal policies both have the desired effect on the external balance, their effects on other policy objectives are strikingly different. The wage cut generates strong increases in employment (3.0 per cent) and in GDP (2.5 per cent). The government expenditure cut, on the other hand, leads to a fall in both employment (1.6 per cent) and in GDP (1.1 per cent). Cuts in government spending have a particularly strong negative effect on employment since the government consumption bundle consists of very labour-intensive commodities. Thus, despite the fact that the reduction in government demand creates jobs in the traded sectors, there is a net fall in employment due to the jobs lost in the non-traded sectors.

Regarding some broad distributional aspects of the two policies, it is interesting to note that it is the cut in government spending rather than the wage moderation that leads to a significant fall in labour income. Under the wage policy, the real wage cut is almost fully offset by the growth in employment, thus resulting in only a very minor loss in aggregate disposable labour income (which appears as a zero change at the level of accuracy reported in Table 2). What changes significantly is the distribution of this income between the previously employed and the previously unemployed. The cut in government spending leads to a net loss of 1.7 per cent in real disposable labour income. With real wage rates remaining constant, this loss arises from the loss in aggregate employment under this simulation. Thus, in comparison with the wage policy that redistributes income from the employed to the unemployed, the fiscal policy maintains the real labour income of the employed, and instead places the burden of adjustment on the newly laid off and the previously unemployed workers. The distributional implications of these differences between the two policies will become explicit in Section 5.

Table 2 Projected Effects on Selected Macro Variables

Variable	Simulation I[a] (3.37 per cent cut in the average real wage rate)	Simulation II[a] (7.74 per cent cut in real current government expenditures)
1. Export receipts	5.77	3.17
2. Import expenditures	−0.44	−2.72
3. Balance of trade surplus	1.00	1.00
4. Consumer price index (CPI)	−3.40	−2.83
5. Nominal wage rate	−6.77	−2.83
6. Real GDP	2.48	−1.13
7. Aggregate employment (persons)	3.03	−1.64
8. Public sector borrowing requirement	−1.16	−1.29
9. Real consumption	1.61	−0.92
10. Real investment	1.61	−0.92
11. Real disposable labour income (CPI deflated)	−0.00	−1.74
12. Real disposable capital income (CPI deflated)	4.33	−0.72

Note: (a) Simulation results are expressed as percentage changes for all variables except the balance of trade surplus and the public sector borrowing requirement, which are expressed as percentages of GDP.

4. Interfacing the ORANI-NAGA Model with the IHS Unit Record Data

As indicated in Section 2, our strategy for generating distributional results depends on revising the pre-shock unit records (derived from the IHS) according to the projected values of a number of 'interface' variables obtained from the ORANI-NAGA simulations.[8] The information in the unit records includes the amount of (pre-tax) income a person receives from each of the possible

[8] The description of the interface methodology in this section relies heavily on Agrawal, Meagher and Parsell (1987).

income sources, and a weight which reflects the number of people in the population that the person represents. The post-shock unit records are formed by revising the values of these incomes and weights.

Following an economic shock, an individual's pre-tax income can be affected by two factors. First, a person's income is likely to change if his/her employment status changes. For example, if a previously unemployed miner finds a job in the newly expanding export-oriented mining sector, then the miner's income is likely to increase. Secondly, pre-tax incomes can also change without any change in the employment status of the individual if the income he/she receives from any source changes. For example, an increase in the demand for traditional exports is likely to lead, in the short run, to higher incomes for existing farmers who receive incomes from agricultural land, capital and labour. It is these two influences that we take into account in calculating the post-shock incomes for the individuals in our database.

4.1 Revising Pre-Tax Incomes

Table 3 contains the projections for a selection of ORANI-NAGA variables describing factor price and commodity price changes. Table 4 indicates how these projections are used to update the incomes from various sources for each individual in our sample. Thus, for example, in Simulation I, each individual's income from wages, salaries and supplements is reduced by 6.77 per cent (the value for w in Simulation I in Table 3), their income from rent is increased by 2.42 per cent (the value for r in Simulation I in Table 3), and so on.

Table 3 Projected Effects on Various Price Indices

Variable[a]	Symbol	Simulation I[b] (3.37 per cent cut in the average real wage rate)	Simulation II[b] (7.84 per cent cut in real current government expenditures)
1. Pre-tax nominal wage rate	w	−6.77	−2.83
2. Return to capital, ownership of dwellings	r	2.42	−5.69
3. Return to land, agricultural	al	9.71	4.40
4. Return to capital, agricultural	ak	9.21	3.89
5. Return to capital, excluding ownership of dwellings and agriculture	nk	2.28	−3.73
6. Return to capital, excluding ownership of dwellings	ok	2.68	−3.29
7. Consumer price index	cpi	−3.40	−2.83
8. Government benefit index	gbi	−3.40	−2.83

Notes: (a) Note that variables 1 through 6 are nominal variables and are notionally dollars per relevant quantity unit.
(b) Simulation results are expressed as percentage changes.

For the projections in Table 3, we make the following observations:

(i) Under the conditions of our simulations, real wage cuts lead to a fall in the costs of production, to cheaper outputs and hence to a fall in the CPI. Table 3 reveals that a 3.37 per cent cut in real wages under Simulation I induces a 3.40 per cent fall in the CPI. Hence, nominal wages have to fall by 6.77 per cent in order to obtain a real wage cut of 3.37 per cent. Under the second simulation, on the other hand, we assume that real wages are fixed, so that the nominal wage rate changes by the same magnitude as the CPI (−2.83 per cent).

(ii) The return to capital in the ownership of dwellings industry (r) varies directly with real private consumption. This industry represents the utilisation of the housing stock. Its price is the rental price of housing, including imputed rents on owner-occupied dwellings. In our simulations, the housing stock in use is assumed to be unaffected by the shock. Hence, increases in private consumption under Simulation I (see Table 2) bid up housing rents while decreases in private consumption under Simulation II (see Table 2) bid own housing rents.

(iii) The returns to fixed factors (land and capital) in each industry vary directly with the output of that industry. Since the quantity of land and capital available for use are fixed in the short run, any increase in the output of an industry has to be obtained by hiring more labour. As the fixed factors become relatively scarce, their rents are bid up.

(iv) Since the agricultural industries are export oriented, their output is fairly sensitive to, and varies inversely with, the pre-tax nominal wage rate. This is because a fall in the pre-tax nominal wage rate is associated with an improvement in the international competitiveness of the economy. Since the nominal wage rate falls under both simulations, the returns to agricultural land (al) and agricultural capital (ak) increase under both simulations. However, since the nominal wage rate falls further in Simulation I, these returns increase more under that simulation.

(v) The outputs of the non-agricultural industries, excluding mining, are influenced primarily by domestic demand conditions. Since mining industries account for a relatively small share of total non-agricultural output, the returns to fixed factors in non-agricultural industries tend, on average, to vary directly with private absorption. Hence, the increase in private absorption in Simulation I (see Table 2) bids up the average return to non-agricultural capital (nk, ok). The converse happens in Simulation II.

(vi) Under both simulations, incomes from interest payments, other sources (such as alimony, child maintenance, etc.), and government benefit payments are maintained in real terms, that is, they are fully indexed to the CPI.

4.2 Revising the Population Weights

All persons included in the IHS can be classified into one of three categories according to their labour force status: employed, unemployed or not in the labour force. In our simulations, induced changes in the demand for labour lead to changes in the number of persons employed. Since the labour force participation of individuals responds to changes in their employment opportunities, this leads to corresponding changes in the numbers belonging to both the other categories. Thus the population weights attached to each person in the sample must be adjusted to reflect these changes in labour force participation.

In a recent study, Peters and Petridis (1985) have estimated the participation responses of seven demographic groups to changes in the probability of their being employed. We adopt their estimates in our procedure for revising the population weights as follows:

(i) Assuming no change in the number of hours worked per employed person, the ORANI model determines the change in the number of persons employed in each of 112 industries. Using a mapping based on 1981 Census data, these changes are converted to the 61 occupations identified in the unit record data. The weights for employed persons are then adjusted on an occupation-specific basis to reflect changes in their employment.[9]

[9] This procedure is applied to all employed persons except owner-operators in IHS occupation numbers 3 (Medical practitioners, dentists), 19 (Farmers, farm managers), 21 (Other rural workers) and 27 (Road drivers). For these four categories, we assume that the change in employment demand is reflected not in a change in the number of persons employed but in a change in the hours worked per person. This has been done because these occupations contain a high proportion of owner-operators, and the stock of physical capital and land are fixed in our simulations.

Table 4 Procedure for Revising Pre-Tax Incomes

Income source	Updated according to variable
1. Wages, salaries and supplements	Pre-tax nominal wage rate (w)
2. Imputed and actual rental income	Return to capital, ownership of dwellings (r)
3. Imputed income from agricultural land	Return to land, agricultural (al)
4. Imputed income from agricultural capital	Return to capital, agricultural (ak)
5. Imputed income from non-agricultural capital	Return to capital, excluding ownership of dwellings and agriculture (nk)
6. Dividends	Return to capital, excluding ownership of dwellings (ok)
7. Interest income	Consumer price index (cpi)
8. Other income	Consumer price index (cpi)
9. Income from government benefit payments	Government benefit index (gbi)

(ii) Next, the employment change in each occupation is decomposed into changes in full-time and part-time employment, which are further decomposed into changes in each of the seven demographic categories considered by Peters and Petridis. In this decomposition we assume that the relevant employment shares remain the same as in the unit record data. Summing across occupations then gives the change in the numbers employed for 14 categories differentiated by full-time and part-time employment and by demographic group.

(iii) Using group means for the same 14 categories evaluated from the unit record data, the estimates of Peters and Petridis are converted into elasticities of labour force participation with respect to employment. Given the change in the number employed from step (ii), the change in the number of participants is determined for each demographic group. These numbers indicate the participation responses of workers to changes in their employment opportunities. The database classifies all non-participants into two groups: those who have looked for work in the twelve months preceding the survey and those who have not. We use the values calculated for the change in the number of participants in each demographic group to adjust the weight attached to non-participants belonging to the former category, that is, those who have previously looked for work. For the other non-participants, the weight is not adjusted at all. These persons include retired and other workers who do not respond to short-term changes in their employment opportunities.

(iv) Given the change in the number of persons employed (from step (ii)) and the change in the number of participants (from step (iii)), we calculate as the residual the change in the number of persons unemployed. This number is obtained for each demographic group and is then used to adjust the weight attached to each unemployed person according to his/her demographic category.

Table 5 Projected Effects on the Numbers Belonging to Various Labour Force Categories

Labour force category	Number of persons in 1984-85 aged 15+	Simulation I[a] (3.37 per cent cut in the average real wage rate)	Simulation II[a] (7.74 per cent cut in real current government expenditures)
1. Employed – full-time	5 500 186	3.08	−1.56
2. Employed – part-time	1 135 714	2.79	−2.04
3. Unemployed – looking for full-time work	549 190	−17.74	7.08
4. Unemployed – looking for part-time work	70 001	−4.34	1.32
5. Not in the labour force			
(a) Have looked for work in the survey year	164 597	−61.11	41.92
(b) Have not looked for work in the survey year	4 512 337	0.00	0.00
Aggregate	11 932 025	0.00	0.00

Note: (a) Simulation results are expressed as percentage changes.

Table 5 contains the projected changes in the numbers of persons belonging to each of six labour force categories. It reveals that the cut in the average real wage rate causes a 3.1 per cent increase in the number of full-time jobs and a slightly smaller (2.8 per cent) increase in the number of part-time jobs. The reason why full-time job opportunities increase by more than part-time ones is that the main growth in employment in this simulation occurs in the export-oriented agricultural and mining industries which offer relatively less scope for part-time work than, say, the services sector. The increase in aggregate employment under Simulation I causes an increase in workforce participation. This is reflected in the fall in the number of persons who were not in the workforce but had previously looked for work (61.1 per cent). The increase in employment also causes a decrease in the number of persons unemployed and looking for either full-time (17.7 per cent) or part-time work (4.3 per cent).

The cut in real government spending causes falls in both full-time (1.6 per cent) and part-time employment (2.0 per cent). The government consumption bundle is made up relatively heavily of the output of service industries (such as health, education, public administration, etc.). These industries have a higher share of part-time employment than other industries. As a result, under the fiscal cut, part-time job opportunities decline by more than full-time ones. As employment contracts, some of the previously employed workers join the pool of unemployed workers, while others withdraw from the workforce. This is reflected in the increase in the numbers belonging to these categories in Table 5.

5. Distributional Results

In this section, we examine the effects of the two simulations on the distribution of income between low income and high income recipients. For this purpose, all persons[10] have been classified into income deciles on the basis of their real disposable incomes.[11] Table 6 contains the distributional results.

Before we analyse our results, it should be noted that in this paper we are interested only in examining the effects of the shocks on individuals' disposable incomes. No attempt has been made to undertake any welfare analysis, for which it would be necessary to use a fuller definition of income that took into account leisure, wealth, etc. This is because for some individuals, such as married women who choose not to participate in the workforce, individual incomes are likely to be inadequate indicators of welfare levels. Thus, in this paper the terms 'rich' and 'poor' refer to groups with high and low levels of income rather than welfare.

Some notable features of the results presented in Table 6 are:

(i) The aggregate loss in real household disposable incomes is significantly larger under the fiscal policy (0.83 per cent) than under the wages policy (0.07 per cent).

(ii) Under the fiscal policy, on average, persons in all deciles suffer absolute income losses, whereas under the wages policy the results are mixed: the incomes of persons in the six lower income deciles go up while those of the remaining groups fall.

(iii) Finally, and perhaps of most significance for our study, the wage cut is strongly progressive while the fiscal cut is regressive.

To explain these distributional results, we employ the breakdowns provided in Tables 7 and 8. Table 7 contains the breakdown of the deciles according to the proportion of income derived from each of six sources. Table 8 provides the corresponding breakdown with

Table 6 Projected Effects on Real Individual Disposable Incomes

Pre-shock decile ranges[a]	Mean incomes in 1984-85 ($)	Simulation I[b] (3.37 per cent cut in the average real wage rate)	Simulation II[b] (7.84 per cent cut in real current government expenditures)
1. 1 – 858	156	3.85	−2.56
2. 859 – 4 210	2 240	4.11	−3.08
3. 4 211 – 6 753	5 814	1.53	−1.27
4. 6 754 – 8 749	7 630	1.31	−1.05
5. 8 750 – 10 840	9 822	1.39	−1.20
6. 10 841 – 13 480	12 133	0.44	−1.13
7. 13 481 – 16 277	14 838	−0.55	−0.88
8. 16 278 – 19 483	17 829	−0.77	−0.76
9. 19 484 – 24 196	21 598	−0.86	−0.63
10. 24 197 and above	31 659	−0.50	−0.46
Aggregate	12 373	−0.07	−0.83

Notes: (a) Decile 1 includes persons who are reported to receive zero incomes in the database.
(b) Simulation results are expressed as percentage changes.

10 These include the individuals in the sample who are reported to receive zero incomes. We assign to each of them $1 in income.

11 Post-tax or disposable incomes are calculated by applying the provisions of the 1984-85 Australian personal income tax system, as described in Agrawal (1987b).

respect to the numbers of persons belonging to each of three aggregate labour force categories: employed, 'willing to work' (which consists of categories (4) and (5a) in Table 5), and non-participants in the workforce.

The fiscal policy leads to a greater loss in aggregate income than the wages policy because it leads to a significantly larger fall in aggregate real disposable labour income. This source of income accounts for a considerable proportion (48.4 per cent, see Table 7) of aggregate household disposable income. The employment losses associated with the fall in aggregate labour income under Simulation II are also responsible for the average income losses of all groups in this simulation. Under Simulation I, in contrast, while the previously employed persons in the lower income deciles suffer income losses due to the cut in the average real wage rate, other persons in those deciles who were previously without jobs now experience income increases after gaining employment. The income gains of the latter more than offset the losses of the former, so that the net result is an increase, on average, in the incomes of those in the six lower income deciles.

One of the main factors responsible for the result that the wages policy leads to a more equal distribution of income between the rich and the poor, and the fiscal policy to a less equal one, is that the former policy increases employment while the latter reduces it. Table 8 reveals why increases in employment benefit the poor. It shows that the poor, especially those in the second to fifth deciles, have a relatively higher concentration of persons who are willing to work but have no jobs. In other words, one of the causes of poverty is unemployment. As these persons in the lower income deciles find jobs under Simulation I, their average incomes rise. Persons in the four highest income deciles gain relatively less from employment creation because the bulk of them are already employed. Thus, under Simulation I, their incomes fall in absolute as well as in relative terms because their relatively minor employment gains are not enough to offset their income loss due to the cut in their wages and salaries. Under Simulation II, aggregate employment shrinks. As previously employed persons lose their jobs, their incomes fall. Thus, under Simulation II, the income losses of the relatively poorer groups are compounded by their employment losses, leading to the relatively larger falls in their incomes.

A second factor that explains the effect of a given policy on the distribution of income between the rich and the poor is the impact of the policy on different types of incomes. Persons belonging to the various deciles differ considerably in the proportion of total income that they derive from various sources. Our analysis indicates that a fall in labour income relative to other forms of income has a less harmful effect on the incomes of the comparatively poorer groups. This is because, with the exception of those in the highest income decile, the proportion of total income received as wages and salaries increases with average incomes (see Table 7). (Persons in the highest income decile receive a disproportionately high share of their income from other sources.) In both simulations, aggregate real disposable labour income falls relative to aggregate real disposable capital income (see Table 2). However, labour income falls by relatively more in Simulation I. This reinforces the equalising effect of employment generation in this simulation.

Table 7 Individual Income Deciles in 1984-85 Cross-Classified by Source of Income

Pre-shock decile ranges	Proportion[a] of pre-tax income derived from					
	Wages and salaries	Own farm	Dwelling rents	Capital income	Government benefits[b]	Other income[b]
1. First decile	5.7	0.4	0.4	3.1	57.0	33.4
2. Second decile	14.7	1.7	3.7	8.8	54.2	16.9
3. Third decile	24.6	2.1	3.2	12.4	48.1	9.4
4. Fourth decile	30.9	2.5	3.5	9.7	45.4	8.0
5. Fifth decile	34.0	2.0	12.0	8.6	35.3	8.2
6. Sixth decile	53.2	1.7	7.0	6.3	21.4	10.4
7. Seventh decile	70.0	1.7	3.8	5.6	10.0	8.9
8. Eighth decile	77.2	1.2	3.8	3.8	5.1	8.8
9. Ninth decile	77.9	1.3	4.0	4.1	2.4	10.3
10. Tenth decile	66.4	1.6	3.9	4.5	1.4	22.3
Aggregate	48.4	1.7	4.9	7.0	26.0	12.1

Notes: (a) The numbers sum to 100 across each row.
(b) Real incomes from these two sources are assumed to remain unchanged in both simulations.

6. Conclusion

One of the key elements in the Australian Government's strategy to achieve external balance in recent years has been its reliance on wage moderation. In addition, it has curbed its own demand in order to facilitate the required transfer of resources to the traded sectors. In this paper, we have examined the distributional outcomes of these two policies using a computable general equilibrium model of the Australian economy. This is essential in order to understand all the relevant linkages involved:

> Perhaps more than any other issue, the distribution of income results from a complex set of relationships that requires a general equilibrium rather than a partial equilibrium analysis. A model where prices and incomes are truly endogenous is therefore all the more useful in this context.
> [Dervis, de Melo and Robinson 1982, p. 397]

Though the mechanisms generating the distributional results of the paper may be fairly complex, the main conclusion is quite straightforward:

Employment is important for income distribution.

We find that policies designed for structural reform are likely to have a more equitable outcome if the required resource transfer is accomplished in an environment where output and employment are growing rather than in one where they are shrinking. With investment, and hence labour productivity, predicted to remain low in the medium-term future (Dixon and Parmenter 1988), our main policy conclusion is that during this crucial period of adjustment, the Government should continue to rely relatively heavily on its policy of wage moderation.

Table 8 Individual Income Deciles in 1984-85 Cross-Classified by Labour Force Status

Pre-shock decile ranges	Employed	Willing to work[a]	Not in the labour force	Row total[b]
1. First decile	7.9 (1.3)	4.1 (5.8)	88.0 (21.9)	100
2. Second decile	27.3 (5.2)	10.1 (16.4)	62.6 (17.5)	100
3. Third decile	37.7 (6.8)	14.4 (21.9)	47.9 (12.7)	100
4. Fourth decile	41.0 (7.4)	10.0 (15.1)	49.1 (13.0)	100
5. Fifth decile	43.5 (7.8)	5.8 (8.8)	50.8 (13.4)	100
6. Sixth decile	60.3 (10.8)	6.2 (9.5)	33.5 (8.9)	100
7. Seventh decile	77.3 (13.9)	7.0 (10.6)	15.7 (4.2)	100
8. Eighth decile	85.3 (15.3)	4.2 (6.4)	10.4 (2.8)	100
9. Ninth decile	88.3 (15.9)	2.5 (3.9)	9.1 (2.4)	100
10. Tenth decile	86.5 (15.5)	1.0 (1.5)	12.5 (3.3)	100
Aggregate	55.6 (100.0)	6.6 (100.0)	37.8 (100.0)	100

Notes: (a) This category includes categories (4) and (5a) in Table 5.
(b) Note that the first set of numbers for each decile are the row breakdowns and sum to 100 across each row. The second set of numbers, that is, the numbers in parentheses, are the column breakdowns and sum to 100 in each column.

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