Regional Unemployment Disparities:
An Evaluation of Policy Measures

by

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Abstract

This paper analyses the efficacy of regional and federal government policies in reducing inter-regional unemployment disparities. We use as our framework a two-region general equilibrium model with a given freely-mobile supply of labour. We assume inter-regional migration to occur in response to inter-regional utility differentials. Each region has households, firms and a regional government. In addition to regional governments, there is a federal government. The firms in a region use a single factor, labour, to produce a single good which we assume to be different to that produced in the other region. It is supplied to households and to the regional government in the form of payroll taxes. Households consume some, trade some with households in the other region and give some up to the federal government as income tax. Firms and households bargain over wages and firms then choose employment to maximise profits. The resulting equilibrium will generally not be a full-employment one.

We simulate a linearised numerical version of the model. We examine seven alternative policies, six carried out by a regional government and one by the federal government. In the first group there are traditional tax/expenditure policies as well as policies which might be seen as attacking the natural rate of unemployment: changes in unemployment benefits, changes in union power, changes in the labour force and changes in labour productivity. The federal government policy is a regionally- differentiated fiscal policy. Contrary to expectations, many policies which have traditionally been recommended to alleviate unemployment, are found, in fact, to exacerbate the unemployment problem.

1. Introduction

In the late 1960s economists became aware of a phenomenon not previously widely analysed. This was the phenomenon of regional unemployment disparities – the persistence of unemployment at a significantly higher level in some of the regional economies than in the national economy itself. To the economists who observed this phenomenon it seemed likely that it would be of considerable concern to both national and regional governments.

National governments could be expected to see regional unemployment disparities in social-justice terms. The working rule would be that those of its citizens who lived in one region of the nation should have the same access to publicly-provided goods of a welfare-enhancing kind as those who lived in the other regions. Those who live in region 1 should have the same educational opportunities as those who live in regions 2, 3, 4,..., public health systems, public libraries, public symphony orchestras of a comparable standard and equally safe road systems. Following this line of thought, they could be expected to argue, when faced with the phenomenon of regional unemployment disparities, that those of its citizens who lived in region 1 should have the same employment opportunities as those who lived in regions 2, 3, 4,... In other words, national governments could be expected to find regional unemployment disparities a matter of considerable concern.

The same would be true of regional governments, though their line of thought would not be quite so lofty. The government of a region with unemployment persistently above the national figure would see this as a threat to survival because it would provide an easy target for its opponents. They would be able to attribute the existence of the disparity to the incompetence of the government and to claim that they would remove it if elected.

In short, it was concluded by the economists that, one way or another, the phenomenon of regional unemployment disparities was likely to be a matter of considerable concern to national and regional governments. This being the case, the question which needed to be addressed was whether regional unemployment disparities can be reduced by policy action on the part of national or regional governments; and it was this question which motivated the seminal work of Thirlwall (1966).

Thirlwall approached the policy question through a prior question: how do unemployment disparities arise? His view was that once we know how unemployment disparities come about we will be well-placed to propose policies for reducing them. This being so, the first step must be to advance a hypothesis relating to the causes of observed regional unemployment-rate disparities and proceed to test this hypothesis against relevant empirical data. If the hypothesis stands up we have a basis for proposing policy measures that might deal with the problem.

Proceeding along these lines, he tested the hypothesis that the immediate cause of observed regional unemployment-rate disparities are differences between regions as regards sensitivity to the national cycle, these differences being due, in turn, to a combination of differences between *industries* as regards sensitivity to the national cycle and differences between regions as regards industry composition. Thirlwall tested this hypothesis against UK data and found reasonable support. He was not prepared to go further, however, and use what he had found to address the policy problem. His final paragraph read that more research into the causes of disparities is required before policies for dealing with the problem can be formulated.

Thirlwall's call for further research into the causes did not go unheeded. Numerous studies which adopted his basic analytical approach with extensions and/or elaborations have continued to appear until recent times. These include Brechling (1967), Harris and Thirlwall (1968), Elias (1978, 1979, 1980), Gordon (1979, 1980, 1985), Bell (1981), Forrest and Naisbitt (1988), Byers (1990), Chapman (1991), Groenewold (1991), Debelle and Vickery (1998, 1999), McGuire (2001), Dixon *et al.* (2001), Weiler (2001) and Brunello *et al.* (2001). Empirical work on regional unemployment disparities, not necessarily in the Thirlwall framework, has also been reported by Groenewold and Hagger (1995), Groenewold (1997) and Dixon and Shepherd (2001) for Australia; by Baddeley *et al.* (1998) and Cameron and Muellbauer (2001) for the UK; by Jimeno and Bentolila (1998) for Spain; by Pehkonen and Tervo (1998) and Tervo (2000) for Finland and by Galiani *et al.* (2005) for Argentina.

The intensive research along Thirlwall lines appears, however, to have stopped short of a solution of the policy problem. Moreover, a recent paper, Dixon and Shepherd (2001), suggests that what *has* been contributed is suspect. Among other things, this

paper details several basic statistical problems connected with a Thirlwall-type analytical approach. These would undermine any policy conclusions to which it might give rise.

There is, then, an important gap in the literature to be filled. The present paper aims to help in this direction. We use as our framework of a two-region general equilibrium model taken from a class which has played an important part in the fiscal-federalism literature, viz., models of multi-regional federations with a given freely-mobile supply of labour. A model of this class has been used in, e.g., Boadway and Flatters (1982), Myers (1990), Petchey (1993, 1995), Petchey and Shapiro (2000) and Groenewold, Hagger and Madden (2000, 2003). In these models labour is allowed to migrate costlessly between regions in search of maximum welfare and they typically impose, as an equilibrium condition, that the utility of the representative household be the same in all regions.

The model which we build has two regions, each with households, firms and a regional government. In addition to regional governments, there is also a federal government. The households and firms are optimizers but the governments are not; the fiscal decisions of the governments are treated as exogenous.¹

The firms in a region produce a single good which we assume to be different to that produced in the other region. It is supplied to households and to the regional government. Households consume some, trade some with households in the other region and give some up to the federal government as income tax. Governments costlessly transform the good into a government good. The regional government supplies the transformed good in equal amounts to households in its region free of charge and finances the purchase of the good by a payroll tax levied on firms located in its region. The federal government provides output to households in both regions (possibly different amounts per capita) and finances this by a tax levied at a uniform rate on household incomes in both regions.

¹ Recent work has extended models of this type by making the regional governments behave in an optimizing way, commonly by assuming that regional governments are beneficent in that they choose their tax and expenditure levels so as to maximise the utility of their citizens subject to the constraints imposed by the structure of the economy. Such an approach has been used in, e.g. Petchey (1993), Petchey and Shapiro (2000, 2002) and Groenewold, Hagger and Madden (2000, 2003).

Output is produced using a single factor, labour, which is supplied by households. We assume that households supply labour only to firms in the region in which they live, thus excluding the possibility that they live in one region and commute to work in the other. Regional population and labour force are therefore effectively the same. We do allow inter-regional migration, however, and this is one of three sources of interconnectedness between the two regions. We follow the literature cited above and assume migration to occur in response to inter-regional utility differentials.

We model the labour market in each region by assuming bargaining between firms and a union which represents households. Unions are assumed to bargain with firms over wages and firms then decide on employment to maximise profits. There is no reason why employment should equal the labour force in equilibrium so that, despite its Walrasian nature, the model allows for equilibrium unemployment. Since migration equalises utility and not unemployment across regions, there is no reason why unemployment rates should be equalised by the forces of migration. In this sense the model generates endogenous unemployment disparities as the outcome of any differences in exogenous variables and parameters across regions and the disparities can be thought of in terms of compensating differentials.

There are therefore three sources of interconnectedness between the regions – inter-regional migration, inter-regional trade and the redistribution carried out by the federal government. We abstract from other possible inter-regional connections. So, we assume that each regional government supplies the government good only to households living in its own region, thus abstracting from inter-regional spillover effects in the provision of government goods. Further, we assume that each firm is owned by households in the region in which it is located. Given our earlier assumption that firms employ labour only from households in the region, we also abstract completely from inter-regional factor income flows.

The resulting model is highly non-linear. For this reason it cannot be solved analytically and so cannot be used, as it stands, to address the question with which the paper is concerned – whether there are policies through which regional unemployment disparities can be removed. We get round this difficulty by using a process of log-differentiation to linearise the model which is then calibrated from Australia data and

used to simulate the effects of a variety of shocks designed to capture policies which might be used to combat unemployment disparities.

2. The model

2.1 The representative household ²

The representative household of region i operates with a utility function of the form:

$$(1) \quad V_i = \beta_i C_{1i}^{\gamma_{1i}} C_{2i}^{\gamma_{2i}} G_i^{\delta_i}, \quad i = 1, 2$$

where V_i = utility of the representative household, region i ,

C_{1i} = real private consumption of good 1 per household, region i ,

C_{2i} = real private consumption of good 2 per household, region i ,

G_i = real government-provided consumption per household, region i .

β_i , γ_{ji} and δ_i are constants with:

$$\beta_i > 0$$

$$0 < \gamma_{ji} < 1$$

$$0 < \delta_i < 1$$

$$\gamma_{1i} + \gamma_{2i} + \delta_i = 1$$

The representative household in region i takes G_i as given and chooses C_{ji} ($j=1,2$) so as to maximise V_i subject to the constraint imposed by its after-tax income:

$$P.C_{1i} + C_{2i} = (1-M)J_i$$

where M = rate of federal government income tax,

P = price of good 1 in terms of good 2, and

J_i = real household income in region i .

The solution to the household's problem is given by:

$$(2) \quad C_{ji} = (\gamma_{ji}/(\gamma_{1i}+\gamma_{2i}))(1-M)J_i.P^{j-i}, \quad i, j = 1, 2$$

Real income per household in region i is defined as:

$$J_i = \Pi H_i + W_i^* + U_i.UB_i, \quad i = 1, 2$$

where ΠH_i = real profit distribution per household, region i

W_i^* = real wage income per household, region i

² Definitions of all variables and parameters are reproduced in Appendix 1.

U_i = unemployment rate, region i

UB_i = real unemployment benefits per unemployed person, region i

W_i^* , the real wage per *household* is interpreted as, W_i , the real wage per *worker* in region i weighted by the probability of employment in region i . Hence W_i^* can be replaced by $(L_i/N_i)W_i$ where W_i is the real wage rate in region i , L_i is employment in region i and N_i is the workforce (= population) in region i . Using this, J_i can be written as:

$$(3) \quad J_i = \Pi H_i + (L_i/N_i) \cdot W_i + U_i \cdot UB_i = \Pi H_i + (1-U_i) \cdot W_i + U_i \cdot UB_i, \quad i = 1, 2$$

where we have used the definition of the unemployment rate:

$$(4) \quad U_i = (N_i - L_i)/N_i = 1 - L_i/N_i, \quad i = 1, 2.$$

We assume that inter-regional migration of households exists and that it continues until utility per household is equalised in the two regions:

$$(5) \quad V_1 = V_2$$

This formulation incorporates the assumption that inter-regional migration is costless. Clearly in practice this is not the case although it is not an uncommon formulation in the literature. There are papers such as Mansoorian and Myers (1993) which explore the implications of relaxing this assumption but we start with the simplest assumption and leave to further research the extension to costly migration; the analysis in Mansoorian and Myers suggests that the discontinuities introduced in this extension will add considerable complexity.

2.2 The representative firm

The representative firm of region i operates with a production function of the form:

$$(6) \quad Y_i = D_i (L_i/F_i)^{\alpha_i} \quad i = 1, 2 \quad 0 < \alpha_i < 1$$

where Y_i = output of the representative firm, region i ,

D_i = productivity parameter, region i , and

F_i = the (exogenous) number of firms in region i .

Given the assumption of decreasing returns to labour, competition will ensure that all firms will be of equal size.

Firm profits are given by:

$$(7) \quad \Pi F_i = Y_i - W_i(L_i/F_i)(1+T_i), \quad i = 1, 2$$

where T_i is the rate of payroll tax levied by the regional government in region i .

We model the labour market using a “right-to-manage” bargaining framework in which the wage is determined by the bargaining of firms and unions after which the firms choose employment to maximise profits given the bargained wage. The firm’s profit-maximising employment condition is the usual marginal productivity condition:

$$(8) \quad \alpha_i D_i (L_i/F_i)^{\alpha_i-1} = W_i (1+T_i) \quad i = 1,2$$

conditional on the bargained wage.

2.3 Wage determination

We assume that the wage in region i is determined by a process of negotiation between employers and trade unions. The union’s bargaining aim is to push the wage bill as high as possible relative to the figure they believe workers could obtain elsewhere in the region if the bargaining process breaks down. In pursuing this aim, however, they are constrained by the bargaining aim of the employers which is to preserve profits. We formalise this set of assumptions, following Layard, Nickell and Jackman (1991), by supposing that the bargained wage is the outcome of the following optimisation problem:

$$\max_{\{W_i\}} B_i = (\Pi F_i) ((W_i - A_i)L_i)^{\Omega_i}, \quad 0 < \Omega_i < 1$$

subject to (6) where A_i is the income workers expect to be able to obtain elsewhere in region i if a bargain is not reached and Ω_i is a parameter representing union strength in the bargaining process in region i . We assume that A_i depends on both the expected wage in the rest of the region (W^e) as well as unemployment benefits (UB):

$$A_i = (1-U_i)W^e + U_i \cdot UB_i$$

where $(1-U_i)$ is taken as the probability of employment elsewhere and U_i the probability of unemployment should the bargaining process break down. We assume that in solving the bargaining problem both firms and unions are myopic in the sense that they both ignore the effects of wages on employment. Under these assumptions, the first-order condition for the bargaining problem is:

$$\Omega_i (\Pi F_i) = (W_i - A_i)(1+T_i)L_i$$

Using the definition of A_i , the marginal productivity condition for profit maximisation, equation (7), and the assumption that in equilibrium the expected wage (W^e) is equal to the actual wage (W), the first-order condition can be rewritten as:

$$(9) \quad W_i/(W_i - UB_i) = (\alpha_i/(1 - \alpha_i))(1/\Omega_i)U_i \quad i = 1, 2,$$

so that there is a simple negative relationship between the equilibrium wage and the unemployment rate which is shifted up by an increase in union power as well as by an increase in the level of unemployment benefits.

2.4 The regional government

The government of region i purchases output from the firms in its region for the distribution to households, both as government good and as unemployment benefits, and receives revenue from a payroll tax levied at a constant rate in its region. We assume that the government of region i balances its budget so that outlay per household and tax collections per household are equal. This gives:

$$N_i GR_i + (N_i - L_i) UB_i = L_i T_i W_i, \quad i = 1, 2$$

where GR_i = the amount of (regional) government good provided per household, region i .

Using the definition of the unemployment rate, U_i , we can write this condition as:

$$(10) \quad GR_i + U_i UB_i = T_i W_i (1 - U_i), \quad i = 1, 2$$

2.5 The federal government

The federal government collects income tax at a fixed rate, M , from all citizens. Its total tax collections are $M(N_1 J_1 + N_2 J_2)$. It provides output to the citizens of each region, possibly in different amounts. The output provided to households in region i is GF_i per capita or $N_i GF_i$ in total. It too balances its budget so that

$$(11) \quad N_1 GF_1 + N_2 GF_2 = M(N_1 J_1 + N_2 J_2).$$

This structure therefore abstracts from the equalisation procedures which are common to federations. While such equalisation arrangements are extensive in Australia, there is no reason to believe that their interaction with traditional anti-unemployment policies would be likely to substantially alter our results in which case to introduce them would be to needlessly complicate the model.

2.7 Model closure

As things stand the model is incomplete in the sense that there are more equations than endogenous variables. We remedy this by adding various definitional equations which provide extra links between the variables we already have.

We begin with a relationship that defines real government-provided consumption per household in region i , G_i :

$$(12) \quad G_i = GR_i + GF_i, \quad i = 1, 2.$$

Next, national population (= labour force) is defined by:

$$(13) \quad N_1 + N_2 = N,$$

where N is the (exogenous) national population.

It is assumed that the representative firm in region i distributes all its profit to households in region i . From this it follows that the representative household's profits receipts (ΠH_i) are related to firm profits (ΠF_i) by the condition:

$$(14) \quad F_i \cdot \Pi F_i = N_i \cdot \Pi H_i, \quad i = 1, 2.$$

Note that this excludes the possibility that firms in one region are owned by households in another and while this is undoubtedly unrealistic, it buys considerable simplicity since it reduces the interconnectedness between regions and allows us to focus on the links which result from inter-regional trade and migration. Besides, it is unlikely that in practice cross-border firm ownership is an important channel of influence between regions.

Next, we have a market-clearing condition for the output market in each region:

$$(15) \quad F_i \cdot Y_i = N_1 C_{i1} + N_2 C_{i2} + N_i GR_i + N_i MJ_i, \quad i = 1, 2.$$

This relationship simply states that output produced in region i is (i) consumed by households in the region, or (ii) traded to households in the other region and consumed by them, or (iii) paid to region i 's government to be converted to the government good, or (iv) paid to the federal government as income tax and converted to the government good.³

Finally, we have a balanced-trade assumption: since there are no assets in the mode, we cannot allow either region to consume in excess of its income. Hence

$$(16) \quad C_{21} = P \cdot C_{12}.$$

³ Note that some of the payroll tax collected by the regional government is also paid out in the form of unemployment benefits; it is assumed that this is still in the form of the consumption good and that households either consume it as such or trade it with households in the other region.

The model consists of the 30 equations (1)-(16) in 39 variables V_i , C_{ji} , G_i , ΠH_i , ΠF_i , U_i , W_i , UB_i , P , L_i , N_i , F_i , Y_i , J_i , T_i , Ω_i , GR_i , GF_i , N and M of which the 11 variables UB_i , F_i , GR_i , Ω_i , GF_i and N are exogenous. Thus there are 28 endogenous variables. Two equations are redundant since equations (3), (4), (7), (10), (14) and (16) can be used to derive (15). We therefore drop equations (15), leaving 28 equations in 28 endogenous variables and 11 exogenous variables.

2.8 The short-run version of the model

We define “the short run” as the stretch of time before inter-regional migration begins to respond to inequality between V_1 and V_2 . Using this definition, we can define a short-run version of the model just presented by deleting equations (5) and (13) from the model and transferring both N_1 and N_2 from the endogenous to the exogenous category.

We shall be making use of this short-run version of the model in what follows. When we do so we shall refer to it as the “short-run version of the model” and to the model itself as the “long-run version of the model”.

3. The linearised numerical version of the model

3.1 The linearised version of the model

The two-region model set out in the previous section is non-linear in the levels of the variables and for this reason it cannot easily be used to conduct comparative-static exercises which will throw light on the topic of the present paper. We circumvent this problem by using a numerical linearised version of the model which we describe in this section.

To linearise the model of section 2 we use a process of log differentiation. This converts the model from one which is non-linear in the levels to one which is linear in the proportional rates of change of the variables. The resulting linearised versions of equations (1)-(16) are given in Appendix 2.

3.2 The numerical version of the linearized model

As can be seen from Appendix 2, the linearised model contains a number of parameters which have to be evaluated before the model can be put to work. These parameters fall into two groups. The first are parameters which appear in model relationships; γ_{ji} and δ_i appear in the utility function (1) and α_i appears in the production function (5). The remainder are linearization parameters and are all shares of some sort.

The *model* parameters can be evaluated with the help of model restrictions. Start with α_i . Here we use the marginal productivity condition, equation (9). Similarly for γ_{ji} and δ_i . Here we follow the approach conventionally adopted by GE modellers and calibrate the utility function to ensure that the initial solution is one of utility maximisation.⁴ Since the relative price of C and G is unity, utility maximisation implies that the ratio γ_{ji}/δ_i is equal to C_{ji}/G_i . Then, using the restriction that $\gamma_{1i} + \gamma_{2i} + \delta_i = 1$, we have

$$\gamma_{ji} = C_{ji}/(C_{1i}+C_{2i}+G_i) ,$$

and

$$\delta_i = G_i/(C_{1i}+C_{2i}+G_i).$$

The *linearization* parameters can be evaluated directly from their definitions, given values for M, ΠH_i , J_i , U_i , W_i , L_i , N_i , T_i , $N_i G F_i$, $N_i J_i$, GR_i , G_i , Y_i , and ΠF_i . All of which can be derived from data on C_i , GR_i , $L_i W_i$, GF_i , W_i , and N_i and the model definitions.

All the model and linearization parameters have the subscript $i = 1, 2$ so that they all have to be evaluated separately for regions 1 and 2. The same applies to the data required for their evaluation. To proceed with this evaluation, therefore, the regions need to be defined and appropriate data need to be obtained.

Given that Australian data is to be used the most obvious way of defining the regions is in terms of the Australian states of which there are six: New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania. We take one of these as region 1 and the other five collectively as region 2. Data for each of C_i , GR_i , $L_i W_i$, GF_i , W_i , and N_i are then obtained for each of the two regions thus defined. The

⁴ It should be noted that, while this parameterisation is conventional, it is not strictly implied by our model specification since in our framework households do not choose G_i but take it as given in maximising utility.

figures we use are the average values for the years 1994-95 to 1998-99. These figures are given in Appendix 3.

To avoid the possibility that the simulation results we are about to report were affected by our choice of the state for region 1, we carry out the above procedure six times with each of the six states taken as region 1 and the remainder collectively as region 2. In this way we simulate six versions of the linearised model.

4. The simulations

In the first section of the paper we pointed out that regional unemployment disparities are likely to be of concern to both regional and federal governments. Both types of government can be expected, therefore, to be anxious to implement policies which aim to combat this phenomenon.

Several policies which a *regional* government might decide to pursue can be examined for effectiveness by means of the linearised version of our two-region model which was discussed in section 3. One policy which a *federal* government might implement can be tested in the same way.

Policies in the first group are:

- (i) A tax cut by the government of region 1 (the high unemployment region) aimed at increasing employment in the region both directly and indirectly.
- (ii) An increase in government expenditure by the government of region 1 aimed at increasing employment in the region *via* aggregate demand channels.
- (iii) A reduction in the benefit paid by the government of region 1 to unemployed persons in the region aimed at strengthening their incentive to find work.
- (iv) A reduction in region 1's labour force by measures such as raising the school-leaving age and encouraging early retirement.
- (v) Changing the industrial relations laws in region 1 in ways which reduces union bargaining-strength.
- (vi) Undertaking measures which increase the productivity of labour in region 1, for example by removing restrictions on logging the region's forests.

One policy which a federal government might decide to undertake is:

- (vii) A regionally-differentiated fiscal policy by which the federal government increases its expenditure in region 1 and reducing expenditure in region 2 while holding its income tax rate fixed.

Each of these seven policies has been examined for effectiveness by simulating each of the six numerical versions of our two-region linearised model. To simulate the first policy, we assumed that the government of region 1 (the high-unemployment region) cuts its payroll tax by 1%. We then identify the exogenous variable through which this shock can be imposed on the six numerical versions of the linearised model. It turns out to be t_1 ; a 1% reduction in the rate of payroll tax in region 1 implies $t_1 = -1$. The next step in the simulation is to solve the six linear systems for their unknowns – the endogenous variables – using $t_1 = -1$ and a zero value for all the other exogenous variables.

To simulate the second policy we assume that the government of region 1 increases its expenditure by 1%; and, as with the first policy, identify the exogenous variable through which the shock can be imposed on the six numerical versions of our model. Here the key exogenous variable is gr_1 . So the second policy is simulated by giving gr_1 the value 1 and all the other exogenous variables in the model a value of zero and then solving the resulting six numerical linear systems for the endogenous variables.

Each of the other five policies has been simulated in the same fashion.

5. Simulation results

The full set of 42 simulation results (seven simulations carried out, in each case, six times) is presented in Appendix 4. In each case the results are given for both the short run and the long run as defined in the previous section. A sub-set of results (results for seven simulations carried out in each case with Tasmania as region 1 and the rest of the country as region 2) are presented in Tables 1, 2, 3 and 4 in the text.

We now examine the results presented in Tables 1, 2, 3 and 4 and draw conclusions about the effectiveness of each of our policies for dealing with unemployment-rate disparities. The reader will be left to check with the full set of results given in Appendix 4 that the conclusions we draw hold regardless of which state is chosen as region 1.

[Table 1 near here]

Table 1 shows that with *policy 1* (a payroll-tax cut by region 1's government) u_1 is negative in both the short run and the long run while u_2 is zero in the short run and positive in the long run. Thus policy 1 is seen to be effective in reducing the initial unemployment-rate disparity.

The mechanism by which the reduction in the unemployment-rate disparity is achieved is not difficult to disentangle. The initial effect of the tax cut is to reduce employment costs in region 1, so increasing firms' demand for labour and, with a given labour force in the short run, reducing unemployment. The wage increases via the bargaining process but not by enough to offset the increase in employment.

There is an increase in output (and output per capita) due to the increase in employment and so an increase in consumption but the effect of this on utility is more than offset by the fall in regional government expenditure necessitated by the tax cut working through the regional government's budget constraint. There are only small effects on region 2, working through a relative price change in favour of good 2.

The final result in the short run is to leave residents in region 1 worse-off despite the fall in unemployment and region 2's residents slightly better-off.

Once we move from the short to the long run by allowing inter-regional migration to occur, the utility gap which developed in the short run induces migration from region 1 to region 2, reducing the labour force in region 1 and increasing it in region 2. There is, as a result, a further reduction in unemployment in region 1 and a small increase in unemployment in region 2 so that the unemployment gap between the two regions narrows further over time. The long-run equilibrium change in utility is positive but trivial in magnitude. Thus, policy 1 has been successful in reducing the unemployment disparity in both the short run and the long run although it has not appreciably improved welfare.

By contrast, the table shows that *policy 2* (an increase in expenditure by the government in region 1) is not effective since u_1 is positive in both the short run and the long run while u_2 is zero in the short run and negative in the long run. Thus, in both the short run and the long run policy 2 widens, rather than narrows, the unemployment-rate disparity. Why is u_1 positive in the short run? The mechanism is essentially the opposite

of that for policy 2. The increase in government expenditure in region 1 requires a payroll-tax increase in that region if the government is to maintain its budgetary balance. But this payroll-tax rise increases the cost of employment in region 1 and so reduces the level of employment in that region. With the labour force of each region fixed in the short run (recall that in the short run inter-regional migration is ruled out) this downward pressure on employment in region 1 must impose an upward pressure on its unemployment rate.

In the long run the effect is intensified because the increase in government expenditure in region 1 increases utility in that region and so results in migration from region 2 to region 1. This increases the labour force in region 1 and so puts further upward pressure on the unemployment rate. The overall effect is to increase the unemployment gap substantially and reduce welfare in both regions, although by only a small amount.

[Table 2 near here]

Table 2 shows that *policy 3* (a cut in unemployment benefits in region 1) is effective in reducing an unemployment-rate disparity in the short-run since the unemployment rate falls in region 1 while it remains constant in region 2. It does this despite a rise in the real wage in region 1. This is somewhat counter-intuitive since we expect the cut in unemployment benefits to work through a fall in workers' reservation wages and hence a fall in bargained wages. The key is the effect through the regional government's budget constraint: the reduction in unemployment benefit costs allows region 1's government to reduce payroll taxes and hence employment costs. This boosts firms' demand for labour, putting upward pressure on the wage which offsets the effect of the unemployment benefit reduction. In the short run the former effect outweighs the latter. Not surprisingly, residents of region 1 are actually better-off as a result of this policy since wages and employment both rise. A relative price change in favour of region 2 means that residents of region 2 also benefit from this policy.

An unemployment benefit cut remains effective in the long run despite (a) the fact that the fall in region 1's unemployment rate is slightly less in the long run than in the short run due to the influx of labour caused by region 1's utility being higher than region 2's; and (b) a slight decrease in region 2's unemployment rate in the long run. An

inspection of the full results in Appendix 4 shows that the effectiveness of this policy is not dependent on the particular state we chose as region 1 but the signs are the same for all possible choices.

In *policy 4* it is assumed that the government of region 1 reduces the labour force in its region by, e.g., increasing the school-leaving age. This might reflect the view that an excessive unemployment rate results from too few jobs for the number of available workers so that a logical policy is to reduce the work force to more closely match the jobs available.

From the results reported in Table 2, this policy appears to work as desired since the unemployment rate falls, although not by nearly as much as the fall in the labour force. The reason for the smaller than expected fall in unemployment is the fall in the number of jobs – employment falls by almost as much as the fall in the labour force, leaving only a modest reduction in the unemployment rate. The “cause” of this is the rise in the wage which accompanies the unemployment-rate reduction. Nevertheless, the residents of region 1 are better-off, as are the residents of region 2 due, again, to a favourable relative price change.

Over time, as inter-regional migration is permitted, people move from region 2 to region 1 (region 1’s short-run increase in welfare exceeds that of region 2) and the short-run improvement in the unemployment situation in region 1 is almost completely eroded. Combined with a small reduction in unemployment in region 2 (as people leave for region 1), this means that in the long run the unemployment gap actually widens slightly although residents of both regions are still better-off by a small margin. An inspection of the full results in Appendix 4 shows that these effects are not peculiar to our choice of Tas as region 1. Thus policies which have as their main aim a reduction in the labour force have only short-run benefits (and ignore other costs such as expenditures that might be needed to support the increase in the school-leaving age).

[Table 3 near here]

Table 3 shows that *policy 5* (a reduction in union power in region 1) is clearly effective in the short run since the unemployment rate falls in region 1 and remains constant in region 2. There is, however, a counterintuitive increase in the wage rate in the short run. This occurs because the weaker union power “initially” allows a higher

employment level while depressing the wage. The higher employment level improves the regional government's budget, allowing it to cut the payroll-tax rate (which is endogenous in this simulation), reducing firms' employment costs, thus allowing them to offer higher wages which actually more than offsets the "initially" lower wages. Residents of region 1 are better-off in the short run as a result of the higher wages and higher employment.

The policy remains effective in the long run, notwithstanding migration from region 2 to region 1 – in the long run region 1's employment increases by more than its labour force, reducing its unemployment rate. It is interesting to note, though, that in the long run the influx from region 2 depresses region 1's wage by enough to offset the short-run increase described as counterintuitive above.

From Table 3 we also see that *policy 6* (an increase in labour productivity in region 1), like policy 5, is clearly effective in the short run; here, too, the unemployment rate falls in region 1 and remains constant in region 2. Given that wages, profits, output, consumption and employment all increase while taxes and unemployment decrease, it is not surprising that residents of region 1 are clearly better-off. A favourable relative price change also slightly increases welfare in region 2.

We also see, however, that the long-run effectiveness is questionable. The greater short-run welfare gain in region 1 induces migration from region 2, thus spreading the benefits of the productivity improvement across the whole country. While the short-run fall in region 1's unemployment rate is maintained, it is now matched by a substantial fall in the unemployment rate in region 2 so that the improvement in the unemployment gap in the short run is largely eroded.

[Table 4 near here]

Finally, Table 4 shows that *policy 7* (a federal government expenditure reallocation to region 1) has only small effects in the short run – there is a small improvement in welfare in region 1 and an even smaller fall in region 2 as the federal government shifts resources from region 2 to region 1. Not much else changes. In particular, unemployment rates remain unaffected. Thus in the short run the policy is completely ineffective to reduce the unemployment gap between the two regions. This is

true no matter which state is chosen as region 1, as an inspection of Table A47 in Appendix 4 will show.

Over time, migration occurs from region 2 to region 1 which increases the labour force and employment in region 1 and reduces them in region 2. The labour force effect outweighs the employment effect so that unemployment increases in region 1 and falls in region 2. The policy is therefore counter-productive in the long run and residents of both regions are marginally worse-off, although this last effect depends on our choice of Tas as region 1.

6. Conclusions

In this paper we have addressed the issue of regional unemployment disparities. In particular, we have asked whether standard policies for reducing unemployment are effective in reducing the gap between the unemployment in one region and that in the rest of the nation.

For this purpose we built a small two-region CGE model which was largely a standard Walrasian model. The model follows recent literature and incorporates free migration between the regions in response to welfare differences. The model admits the possibility of equilibrium unemployment because wages are determined by bargaining between workers and firms, rather than in the more common labour market of Walrasian models in which wages are determined to clear the market so that unemployment can not exist in equilibrium.

The model was linearised in the log differences and calibrated using data for the Australian states for the period 1994-95 to 1998-99. Within the framework of this model we simulated the effects of seven different policies, six of them policies carried out by a regional government and the seventh by the national government.

Most of the regional government policies were effective in reducing the unemployment-rate disparity, at least in the short run. Thus a reduction in the payroll-tax rate, a reduction in unemployment benefits, a reduction in the labour force, a reduction in union power and an increase in productivity in the high-unemployment region were all effective in reducing its unemployment rate relative to that of the country as a whole in the short run. In the long run most continued to be effective although the beneficial

effects of the reduction in the labour force and the productivity boost were largely eroded when inter-regional migration was allowed in the long run. Only one regional policy had a perverse effect: an increase in expenditure by the regional government actually exacerbates the unemployment-rate disparity both in the short and long runs. Finally a national government policy of reallocating expenditure from the low unemployment to the high unemployment region is ineffective in the short run as well as in the long run.

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**Table 1: Regional Government Fiscal Policy
(Region 1 = Tas)**

Variables	Policy 1: Payroll-Tax Cut ($t_1=-1$)		Policy 2: Government Expenditure Increase ($gr_1=1$)	
	Short Run	Long Run	Short Run	Long Run
v_1	-0.0255	0.0005	0.0326	-0.0006
v_2	0.0009	0.0005	-0.0012	-0.0006
c_{11}	0.1738	0.2067	-0.2224	-0.2782
c_{21}	0.0004	-0.0002	-0.0005	0.0002
c_{12}	0.1738	0.2067	-0.2224	-0.2782
c_{22}	0.0004	-0.0002	-0.0005	0.0002
g_1	-0.5149	-0.4897	0.6590	0.6590
g_2	0.0000	-0.0005	0.0000	0.0006
j_1	0.1734	0.2063	-0.2220	-0.2776
j_2	0.0000	-0.0006	0.0000	0.0008
π_1	0.0124	0.0485	-0.0158	-0.0652
π_2	0.0000	-0.0007	0.0000	0.0009
w_1	0.2642	0.2937	-0.3381	-0.3953
w_2	0.0000	-0.0005	0.0000	0.0007
u_1	-0.1983	-0.2204	0.2537	0.2967
u_2	0.0000	0.0008	0.0000	-0.0011
l_1	0.0189	-0.0793	-0.0242	0.1068
l_2	0.0000	0.0023	0.0000	-0.0031
n_1	0.0000	-0.1004	0.0000	0.1351
n_2	0.0000	0.0024	0.0000	-0.0032
y_1	0.0132	-0.0555	-0.0169	0.0747
y_2	0.0000	0.0018	0.0000	-0.0024
gr_1	-0.7814	-0.7430	1.0000	1.0000
gr_2	0.0000	-0.0007	0.0000	0.0010
t_1	-1.0000	-1.0000	1.2798	1.3458
m	-0.0038	-0.0043	0.0048	0.0057
p	-0.1734	-0.2069	0.2220	0.2784

**Table 2: Cutting Unemployment Benefits and the Labour Force
(Region 1 = Tas)**

Variables	Policy 3: Unemployment Benefit Cut ($ub_1=-1$)		Policy 4: Labour Force Decrease ($n_1=-1, n=-\sigma_{n1}$)	
	Short Run	Long Run	Short Run	Long Run
v_1	0.0386	0.0009	0.2476	0.0061
v_2	0.0003	0.0009	0.0024	0.0061
c_{11}	0.0644	0.0012	0.4133	0.0083
c_{21}	0.0001	0.0012	0.0012	0.0078
c_{12}	0.0644	0.0012	0.4133	0.0083
c_{22}	0.0001	0.0012	0.0012	0.0078
g_1	0.0000	0.0000	0.0000	0.0000
g_2	0.0000	0.0000	0.0000	0.0000
j_1	0.0643	0.0012	0.4121	0.0076
j_2	0.0000	0.0011	0.0000	0.0071
π_1	0.0500	-0.0060	0.3660	0.0067
π_2	0.0000	0.0011	0.0000	0.0069
w_1	0.0704	0.0055	0.4238	0.0078
w_2	0.0000	0.0011	0.0000	0.0067
u_1	-0.8033	-0.7546	-0.3181	-0.0058
u_2	0.0000	-0.0016	0.0000	-0.0104
l_1	0.0765	0.2251	-0.9697	-0.0178
l_2	0.0000	-0.0035	0.0000	-0.0226
n_1	0.0000	0.1532	-1.0000	-0.0184
n_2	0.0000	-0.0036	0.0000	-0.0233
y_1	0.0535	0.1574	-0.6779	-0.0124
y_2	0.0000	-0.0027	0.0000	-0.0175
t_1	-0.3463	-0.2713	-0.4892	-0.0090
t_2	0.0000	-0.0013	0.0000	-0.0085
m	-0.0014	-0.0006	-0.0124	-0.0071
p	-0.0643	-0.0001	-0.4121	-0.0004
ub_1	-1.0000	-1.0000	0.0000	0.0000
n	0.0000	0.0000	0.0000	-0.0232

**Table 3: A Cut in Union Power and an Increase in Productivity
(Region 1 = Tas)**

Variables	Policy 5: Cut in Union Power ($\omega_1=-1$)		Policy 6: Increase in Labour Productivity ($d_1=1$)	
	Short Run	Long Run	Short Run	Long Run
v_1	0.0494	0.0012	0.7721	0.0183
v_2	0.0004	0.0012	0.0066	0.0183
c_{11}	0.0825	0.0016	1.2890	0.0247
c_{21}	0.0002	0.0015	0.0028	0.0234
c_{12}	0.0825	0.0016	1.2890	0.0247
c_{22}	0.0002	0.0015	0.0028	0.0234
g_1	0.0000	0.0000	0.0000	0.0000
g_2	0.0000	0.0000	0.0000	0.0000
j_1	0.0823	0.0015	1.2863	0.0235
j_2	0.0000	0.0014	0.0000	0.0222
π_1	0.0641	-0.0077	1.0010	-0.1205
π_2	0.0000	0.0014	0.0000	0.0214
w_1	0.0379	-0.0453	1.4085	0.1099
w_2	0.0000	0.0014	0.0000	0.0211
u_1	-1.0284	-0.9660	-1.0571	-0.0825
u_2	0.0000	-0.0021	0.0000	-0.0324
l_1	0.0980	0.2882	0.1007	3.0722
l_2	0.0000	-0.0045	0.0000	-0.0704
n_1	0.0000	0.1961	0.0000	3.0644
n_2	0.0000	-0.0047	0.0000	-0.0727
y_1	0.0685	0.2015	1.0704	3.1479
y_2	0.0000	-0.0035	0.0000	-0.0547
t_1	-0.2495	-0.1536	-1.6260	-0.1268
t_2	0.0000	-0.0017	0.0000	-0.0264
m	-0.0018	-0.0007	-0.0280	-0.0115
p	-0.0823	-0.0001	-1.2863	-0.0013
ω_1	-1.0000	-1.0000	0.0000	0.0000
d_1	0.0000	0.0000	1.0000	1.0000

**Table 4: Federal Government Fiscal Policy
(Region 1 = Tas)**

Variables	Policy 7: Government Expenditure Re-allocation ($gf_1=1$, gf_2 endogenous)	
	Short Run	Long Run
v_1	0.0858	-0.0006
v_2	-0.0020	-0.0006
c_{11}	0.0000	-0.1095
c_{21}	0.0000	0.0020
c_{12}	0.0000	-0.1095
c_{22}	0.0000	0.0020
g_1	0.3410	0.2567
g_2	-0.0092	-0.0082
j_1	0.0000	-0.1095
j_2	0.0000	0.0020
π_1	0.0000	-0.1204
π_2	0.0000	0.0023
w_1	0.0000	-0.0985
w_2	0.0000	0.0017
u_1	0.0000	0.0740
u_2	0.0000	-0.0027
l_1	0.0000	0.3275
l_2	0.0000	-0.0078
n_1	0.0000	0.3345
n_2	0.0000	-0.0079
y_1	0.0000	0.2290
y_2	0.0000	-0.0060
gr_1	0.0000	-0.1279
gr_2	0.0000	0.0025
gf_1	1.0000	1.0000
gf_2	-0.0258	-0.0275
m	0.0000	0.0000
p	0.0000	0.1114

Appendix 1: A list of variables

- V_i = utility of the representative household, region i ,
 C_{1i} = real private consumption of good 1 per household, region i ,
 C_{2i} = real private consumption of good 2 per household, region i ,
 G_i = real government-provided consumption per household, region i .
 M = rate of federal government income tax,
 P = price of good 1 in terms of good 2, and
 J_i = real household income in region i .
 ΠH_i = real profit distribution per household, region i
 W_i^* = real wage income per household, region i
 U_i = unemployment rate, region i
 UB_i = real unemployment benefits per unemployed person, region i
 $W_{i,}$ = real wage per worker, region i
 L_i = employment, in region i
 N_i = workforce (= population), region i .
 Y_i = output of the representative firm, region i ,
 D_i = productivity parameter, region i , and
 F_i = the (exogenous) number of firms in region i ..
 T_i = rate of payroll tax levied by the regional government, region i .
 A_i = income workers expect to be able to obtain elsewhere, region i
 UB_i = unemployment benefits, region i
 W_i^e = expected wage, region i
 GR_i = amount of regional government good provided per household, region i .
 GF_i = amount of national government output provided per household, region i
 N = national population
 ΠF_i = firm profits

Appendix 2: The linearised version of the model

The linearized form of the PEGE model is:

$$(1') \quad v_i = \gamma_{1i}c_{1i} + \gamma_{2i}c_{2i} + \delta_i g_i \quad i = 1,2$$

where lower-case letters represent the proportional changes (log differentials) of their upper-case counterparts.

$$(2') \quad c_{ji} = -\sigma_m m + j_i + (j-i)p, \quad i, j = 1,2$$

where $\sigma_m = M/(1-M)$

$$(3') \quad j_i = \sigma_{j\pi h_i} \pi h_i + (\sigma_{jubi} - \sigma_{juwi} \sigma_{ui}) u_i + \sigma_{juwi} w_i + \sigma_{jubi} ub_i, \quad i = 1,2$$

where $\sigma_{j\pi h_i} = \Pi H_i/J_i$, $\sigma_{uwi} = W_i(1-U_i)/J_i$, $\sigma_{jubi} = U_i UB_i/J_i$, $\sigma_{ui} = U_i/(1-U_i)$

$$(4') \quad u_i = (1/\sigma_{ui})(n_i - l_i) \quad i = 1,2$$

$$(5') \quad v_1 = v_2$$

$$(6') \quad y_i = d_i + \alpha_i(l_i - f_i), \quad i = 1,2$$

$$(7') \quad \pi f_i = \sigma_{\pi f y_i} y_i - \sigma_{\pi f w_i}(\sigma_{t_i} t_i + l_i - f_i + w_i), \quad i = 1,2$$

$$(8') \quad d_i + (\alpha_i - 1)(l_i - f_i) = w_i + \sigma_{t_i} t_i, \quad i = 1,2$$

$$(9') \quad w_i - \sigma_{wwubi} w_i + \sigma_{ubwubi} ub_i + \omega_i - u_i = 0, \quad i = 1,2$$

where $\sigma_{wwubi} = W_i/(W_i - UB_i)$, $\sigma_{ubwubi} = UB_i/(W_i - UB_i)$

$$(10') \quad (\sigma_{ui} + \sigma_{grubi}) u_i + w_i + t_i - \sigma_{grgri} gr_i - \sigma_{grubi} ub_i = 0, \quad i = 1,2$$

where $\sigma_{grgri} = GR_i/(GR_i + U_i UB_i)$, $\sigma_{grubi} = U_i UB_i/(GR_i + U_i UB_i)$, $i = 1,2$

$$(11') \quad (\sigma_{gf1} - \sigma_{j1}) n_1 + (\sigma_{gf2} - \sigma_{j2}) n_2 + \sigma_{gf1} gf_1 + \sigma_{gf2} gf_2 - m - \sigma_{j1} j_1 - \sigma_{j2} j_2 = 0,$$

$$(12') \quad g_i = \sigma_{ggri} gr_i + \sigma_{gffi} gf_i \quad i = 1,2$$

where $\sigma_{ggri} = GR_i/G_i$, $\sigma_{gffi} = GF_i/G_i$.

$$(13') \quad \sigma_{n1} + \sigma_{n2} = n,$$

where $\sigma_{ni} = N_i/N$

$$(14') \quad f_i + \pi f_i - n_i - \pi h_i = 0$$

$$(15') \quad f_i + y_i = \sigma_{yci1}(n_1 + c_{1i}) + \sigma_{yci2}(n_2 + c_{2i}) + \sigma_{ygri}(n_i + gr_i) + \sigma_{ymji}(n_i + j_i + m), \quad i = 1,2$$

where $\sigma_{ycij} = N_j C_{ij}/F_i Y_i$, $\sigma_{ygri} = N_i GR_i/F_i Y_i$, $\sigma_{ymji} = N_i MJ_i/F_i Y_i$

$$(16') \quad c_{21} = p + c_{12}$$

Equations (1')-(16') constitute a linear system of 30 equation in the 28 endogenous variables: v_i , c_{ij} , g_i , πh_i , πf_i , u_i , w_i , l_i , n_i , p , y_i , j_i , t_i and m and the exogenous variables gr_i and gf_i , ub_i , f_i , ω_i , d_i and n . Two equations are redundant and we drop equations (15').

Appendix 3: Data-Base

	Total corresponding to						
	C (\$m)	GR (\$m)	LW (\$m)	GF (\$m)	W (\$'000)	L ('000)	Y/L (\$'000)
Region 1 NSW	112265.4	20189.8	92160.8	-192.3	32.8618	2804.5	47.2295
Region 2 ROC	195152.8	36096.6	15227.8	192.3	29.0498	5343.5	43.2768
Nation	307418.2	56286.4	247388.6	0.0	30.3619	8148	44.6373
Region 1 Vic	80040.8	13545.4	65680.6	-686.9	31.3078	2097.9	44.6095
Region 2 ROC	227377.4	42741	181708	686.9	30.0339	6050.1	44.6469
Nation	307418.2	56286.4	247388.6	0.0	30.3619	8148	44.6373
Region 1 Qld	55026	9662.6	42041.6	-83.3	27.2096	1545.1	41.8669
Region 2 ROC	252392.2	46623.8	205347	83.3	31.0995	6602.9	45.2856
Nation	307418.2	56286.4	247388.6	0.0	30.3619	8148	44.6373
Region 1 SA	23339.2	4906.8	18088.6	826.0	27.7773	651.2	43.3753
Region 2 ROC	284079	51379.6	229300	-826.0	30.5864	7496.8	44.7469
Nation	307418.2	56286.4	247388.6	0.0	30.3619	8148	44.6373
Region 1 WA	29616	6259.6	24236.8	-383.0	28.4236	852.7	42.0729
Region 2 ROC	277802.2	50026.8	223151.8	383.0	30.5884	7295.3	44.9370
Nation	307418.2	56286.4	247388.6	0.0	30.3619	8148	44.6373
Region 1 Tas	7130.8	1722.2	5180.2	519.4	26.3489	196.6	45.0305
Region 2 ROC	300287.4	54564.2	242208.4	-519.4	30.4611	7951.4	44.6276
Nation	307418.2	56286.4	247388.6	0.0	30.3619	8148	44.6373

Sources: C_i , L_i , LW_i and GR_i are from ABS times series averaged over the period 1994/95 - 1998/99. Time-series data on interstate imports are not reported by the ABS so that in each case C_{11} was set at 80% of C_1 and C_{21} at 20% of C_1 . C_{12} was then chosen to ensure a zero balance of trade in the initial equilibrium and C_{22} was chosen as $C_2 - C_{12}$. GF_i is computed as $L_i (MGF_i/L_i - MGF/L)$ where MGF_i is final consumption expenditure by the federal government plus grants to state i . All other data are calculated from these figures to ensure that the model constraints hold: $L = L_1 + L_2$, $W_i = W_i L_i / L_i$, $Y_i = GR_i + C_i$, $G_i = GR_i + GF_i$, $T_i = GR_i / W_i L_i$. It should be noted that, as the model excludes investment and net overseas exports, Y_i will not conform with official figures. P_i was set at 1 for each i in the initial equilibrium.

Appendix 4: Simulation results for all states

Table A41

Policy 1: A payroll-tax cut ($t_1=-1$, gr_1 endogenous)

Variable	NSW as region 1		Vic as region 1		Qld as region 1		SA as region 1		WA as region 1		Tas as region 1	
	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR
v1	-0.0250	0.0009	-0.0255	0.0005	-0.0251	0.0016	-0.0270	0.0011	-0.0308	-0.0011	-0.0255	0.0005
v2	0.0168	0.0009	0.0107	0.0005	0.0074	0.0016	0.0030	0.0011	0.0040	-0.0011	0.0009	0.0005
c11	0.1471	0.1848	0.1452	0.1815	0.1571	0.1925	0.1619	0.1981	0.1716	0.2105	0.1738	0.2067
c21	0.0052	-0.0172	0.0037	-0.0099	0.0028	-0.0049	0.0012	-0.0012	0.0016	-0.0046	0.0004	-0.0002
c12	0.1471	0.1848	0.1452	0.1815	0.1571	0.1925	0.1619	0.1981	0.1716	0.2105	0.1738	0.2067
c22	0.0052	-0.0172	0.0037	-0.0099	0.0028	-0.0049	0.0012	-0.0012	0.0016	-0.0046	0.0004	-0.0002
g1	-0.5630	-0.5363	-0.5543	-0.5292	-0.5497	-0.5236	-0.5397	-0.5126	-0.5818	-0.5526	-0.5149	-0.4897
g2	0.0000	-0.0174	0.0000	-0.0108	0.0000	-0.0063	0.0000	-0.0020	0.0000	-0.0046	0.0000	-0.0005
j1	0.1419	0.1800	0.1415	0.1778	0.1543	0.1897	0.1607	0.1968	0.1700	0.2092	0.1734	0.2063
j2	0.0000	-0.0220	0.0000	-0.0136	0.0000	-0.0078	0.0000	-0.0025	0.0000	-0.0059	0.0000	-0.0006
pi1	0.0042	0.0478	0.0046	0.0466	0.0080	0.0486	0.0084	0.0481	0.0063	0.0560	0.0124	0.0485
pi2	0.0000	-0.0256	0.0000	-0.0157	0.0000	-0.0091	0.0000	-0.0029	0.0000	-0.0068	0.0000	-0.0007
w1	0.1879	0.2232	0.1872	0.2206	0.2135	0.2455	0.2361	0.2691	0.2142	0.2494	0.2642	0.2937
w2	0.0000	-0.0192	0.0000	-0.0119	0.0000	-0.0069	0.0000	-0.0022	0.0000	-0.0052	0.0000	-0.0005
u1	-0.0897	-0.1066	-0.0950	-0.1119	-0.1396	-0.1605	-0.1603	-0.1827	-0.1240	-0.1444	-0.1983	-0.2204
u2	0.0000	0.0303	0.0000	0.0185	0.0000	0.0104	0.0000	0.0034	0.0000	0.0080	0.0000	0.0008
l1	0.0057	-0.1574	0.0063	-0.1476	0.0114	-0.1176	0.0124	-0.1055	0.0084	-0.1881	0.0189	-0.0793
l2	0.0000	0.0831	0.0000	0.0520	0.0000	0.0311	0.0000	0.0099	0.0000	0.0226	0.0000	0.0023
n1	0.0000	-0.1641	0.0000	-0.1550	0.0000	-0.1308	0.0000	-0.1196	0.0000	-0.1978	0.0000	-0.1004
n2	0.0000	0.0854	0.0000	0.0533	0.0000	0.0318	0.0000	0.0102	0.0000	0.0231	0.0000	0.0024
y1	0.0044	-0.1233	0.0050	-0.1155	0.0086	-0.0885	0.0090	-0.0759	0.0069	-0.1544	0.0132	-0.0555
y2	0.0000	0.0640	0.0000	0.0401	0.0000	0.0243	0.0000	0.0077	0.0000	0.0174	0.0000	0.0018
gr1	-0.8751	-0.8336	-0.8824	-0.8424	-0.8594	-0.8185	-0.8170	-0.7759	-0.8419	-0.7998	-0.7814	-0.7430
gr2	0.0000	-0.0268	0.0000	-0.0166	0.0000	-0.0097	0.0000	-0.0031	0.0000	-0.0072	0.0000	-0.0007
t1	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000
m	-0.0520	-0.0485	-0.0372	-0.0373	-0.0277	-0.0291	-0.0120	-0.0129	-0.0160	-0.0134	-0.0038	-0.0043
p	-0.1419	-0.2020	-0.1415	-0.1913	-0.1543	-0.1975	-0.1607	-0.1993	-0.1700	-0.2151	-0.1734	-0.2069

Table A42**Policy 2: An increase in regional government expenditure ($rg_1=1$, t_1 endogenous)**

Variable	NSW as region 1		Vic as region 1		Qld as region 1		SA as region 1		WA as region 1		Tas as region 1	
	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR
v1	0.0286	-0.0011	0.0289	-0.0007	0.0292	-0.0019	0.0330	-0.0015	0.0366	0.0014	0.0326	-0.0006
v2	-0.0192	-0.0011	-0.0122	-0.0007	-0.0087	-0.0019	-0.0036	-0.0015	-0.0048	0.0014	-0.0012	-0.0006
c11	-0.1681	-0.2217	-0.1646	-0.2154	-0.1828	-0.2352	-0.1982	-0.2553	-0.2038	-0.2632	-0.2224	-0.2782
c21	-0.0059	0.0207	-0.0042	0.0117	-0.0032	0.0060	-0.0015	0.0016	-0.0019	0.0058	-0.0005	0.0002
c12	-0.1681	-0.2217	-0.1646	-0.2154	-0.1828	-0.2352	-0.1982	-0.2553	-0.2038	-0.2632	-0.2224	-0.2782
c22	-0.0059	0.0207	-0.0042	0.0117	-0.0032	0.0060	-0.0015	0.0016	-0.0019	0.0058	-0.0005	0.0002
g1	0.6433	0.6433	0.6282	0.6282	0.6397	0.6397	0.6607	0.6607	0.6910	0.6910	0.6590	0.6590
g2	0.0000	0.0208	0.0000	0.0128	0.0000	0.0076	0.0000	0.0025	0.0000	0.0058	0.0000	0.0006
j1	-0.1622	-0.2159	-0.1604	-0.2110	-0.1796	-0.2317	-0.1968	-0.2536	-0.2019	-0.2616	-0.2220	-0.2776
j2	0.0000	0.0264	0.0000	0.0161	0.0000	0.0095	0.0000	0.0032	0.0000	0.0074	0.0000	0.0008
pi1	-0.0048	-0.0573	-0.0053	-0.0553	-0.0093	-0.0593	-0.0103	-0.0620	-0.0075	-0.0700	-0.0158	-0.0652
pi2	0.0000	0.0308	0.0000	0.0187	0.0000	0.0111	0.0000	0.0038	0.0000	0.0085	0.0000	0.0009
w1	-0.2147	-0.2678	-0.2121	-0.2619	-0.2485	-0.2999	-0.2889	-0.3468	-0.2545	-0.3119	-0.3381	-0.3953
w2	0.0000	0.0230	0.0000	0.0141	0.0000	0.0084	0.0000	0.0028	0.0000	0.0065	0.0000	0.0007
u1	0.1026	0.1279	0.1076	0.1329	0.1625	0.1961	0.1962	0.2355	0.1473	0.1805	0.2537	0.2967
u2	0.0000	-0.0363	0.0000	-0.0219	0.0000	-0.0128	0.0000	-0.0043	0.0000	-0.0100	0.0000	-0.0011
l1	-0.0065	0.1888	-0.0072	0.1752	-0.0133	0.1437	-0.0152	0.1359	-0.0099	0.2351	-0.0242	0.1068
l2	0.0000	-0.0997	0.0000	-0.0617	0.0000	-0.0380	0.0000	-0.0128	0.0000	-0.0282	0.0000	-0.0031
n1	0.0000	0.1969	0.0000	0.1840	0.0000	0.1597	0.0000	0.1542	0.0000	0.2473	0.0000	0.1351
n2	0.0000	-0.1024	0.0000	-0.0633	0.0000	-0.0389	0.0000	-0.0131	0.0000	-0.0289	0.0000	-0.0032
y1	-0.0051	0.1479	-0.0056	0.1372	-0.0100	0.1081	-0.0110	0.0978	-0.0082	0.1930	-0.0169	0.0747
y2	0.0000	-0.0767	0.0000	-0.0476	0.0000	-0.0297	0.0000	-0.0100	0.0000	-0.0217	0.0000	-0.0024
gr1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
gr2	0.0000	0.0322	0.0000	0.0197	0.0000	0.0118	0.0000	0.0039	0.0000	0.0090	0.0000	0.0010
t1	1.1428	1.1997	1.1333	1.1871	1.1636	1.2217	1.2241	1.2889	1.1878	1.2504	1.2798	1.3458
m	0.0594	0.0582	0.0422	0.0443	0.0323	0.0356	0.0147	0.0166	0.0190	0.0167	0.0048	0.0057
p	0.1622	0.2423	0.1604	0.2271	0.1796	0.2412	0.1968	0.2569	0.2019	0.2690	0.2220	0.2784

Table A43

Policy 3: A cut in unemployment benefits($ub_1=-1$, t_1 endogenous)

Variable	NSW as region 1		Vic as region 1		Qld as region 1		SA as region 1		WA as region 1		Tas as region 1	
	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR
v1	0.0185	0.0093	0.0205	0.0076	0.0314	0.0077	0.0292	0.0026	0.0247	0.0046	0.0386	0.0009
v2	0.0033	0.0093	0.0024	0.0076	0.0024	0.0077	0.0009	0.0026	0.0009	0.0046	0.0003	0.0009
c11	0.0291	0.0117	0.0323	0.0096	0.0504	0.0099	0.0476	0.0034	0.0402	0.0060	0.0644	0.0012
c21	0.0010	0.0119	0.0008	0.0098	0.0009	0.0098	0.0004	0.0033	0.0004	0.0058	0.0001	0.0012
c12	0.0291	0.0117	0.0323	0.0096	0.0504	0.0099	0.0476	0.0034	0.0402	0.0060	0.0644	0.0012
c22	0.0010	0.0119	0.0008	0.0098	0.0009	0.0098	0.0004	0.0033	0.0004	0.0058	0.0001	0.0012
g1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
g2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
j1	0.0281	0.0105	0.0315	0.0088	0.0495	0.0091	0.0472	0.0032	0.0398	0.0054	0.0643	0.0012
j2	0.0000	0.0107	0.0000	0.0089	0.0000	0.0090	0.0000	0.0031	0.0000	0.0052	0.0000	0.0011
pi1	0.0229	0.0057	0.0256	0.0032	0.0394	0.0006	0.0376	-0.0025	0.0307	-0.0054	0.0500	-0.0060
pi2	0.0000	0.0103	0.0000	0.0086	0.0000	0.0087	0.0000	0.0030	0.0000	0.0050	0.0000	0.0011
w1	0.0293	0.0120	0.0329	0.0106	0.0524	0.0126	0.0508	0.0060	0.0415	0.0085	0.0704	0.0055
w2	0.0000	0.0102	0.0000	0.0085	0.0000	0.0086	0.0000	0.0029	0.0000	0.0050	0.0000	0.0011
u1	-0.4917	-0.4834	-0.5242	-0.5129	-0.6882	-0.6621	-0.7136	-0.6832	-0.6029	-0.5838	-0.8033	-0.7546
u2	0.0000	-0.0161	0.0000	-0.0132	0.0000	-0.0130	0.0000	-0.0044	0.0000	-0.0076	0.0000	-0.0016
l1	0.0310	0.0949	0.0349	0.1167	0.0563	0.1779	0.0554	0.1724	0.0407	0.1819	0.0765	0.2251
l2	0.0000	-0.0324	0.0000	-0.0275	0.0000	-0.0293	0.0000	-0.0098	0.0000	-0.0161	0.0000	-0.0035
n1	0.0000	0.0645	0.0000	0.0825	0.0000	0.1237	0.0000	0.1194	0.0000	0.1425	0.0000	0.1532
n2	0.0000	-0.0335	0.0000	-0.0284	0.0000	-0.0301	0.0000	-0.0101	0.0000	-0.0167	0.0000	-0.0036
y1	0.0243	0.0744	0.0273	0.0913	0.0424	0.1339	0.0399	0.1241	0.0334	0.1493	0.0535	0.1574
y2	0.0000	-0.0249	0.0000	-0.0212	0.0000	-0.0228	0.0000	-0.0077	0.0000	-0.0124	0.0000	-0.0027
t1	-0.1906	-0.1720	-0.2147	-0.1905	-0.3066	-0.2616	-0.2770	-0.2268	-0.2262	-0.1902	-0.3463	-0.2713
t2	0.0000	-0.0130	0.0000	-0.0107	0.0000	-0.0106	0.0000	-0.0036	0.0000	-0.0063	0.0000	-0.0013
m	-0.0103	-0.0120	-0.0083	-0.0086	-0.0089	-0.0077	-0.0035	-0.0026	-0.0038	-0.0060	-0.0014	-0.0006
p	-0.0281	0.0003	-0.0315	0.0001	-0.0495	-0.0001	-0.0472	-0.0001	-0.0398	-0.0002	-0.0643	-0.0001
ub1	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000

Table A44

Policy 4: A unit reduction in labour force ($n_1=-1$, $n=-\sigma_{n1}$)

Variable	NSW as region 1		Vic as region 1		Qld as region 1		SA as region 1		WA as region 1		Tas as region 1	
	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR
v1	0.1790	0.0888	0.1793	0.0667	0.2078	0.0512	0.2284	0.0206	0.1492	0.0273	0.2476	0.0061
v2	0.0312	0.0888	0.0211	0.0667	0.0164	0.0512	0.0071	0.0206	0.0054	0.0273	0.0024	0.0061
c11	0.2814	0.1120	0.2826	0.0844	0.3331	0.0661	0.3719	0.0270	0.2431	0.0359	0.4133	0.0083
c21	0.0085	0.1146	0.0074	0.0857	0.0067	0.0654	0.0031	0.0263	0.0018	0.0349	0.0012	0.0078
c12	0.2814	0.1120	0.2826	0.0844	0.3331	0.0661	0.3719	0.0270	0.2431	0.0359	0.4133	0.0083
c22	0.0085	0.1146	0.0074	0.0857	0.0067	0.0654	0.0031	0.0263	0.0018	0.0349	0.0012	0.0078
g1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
g2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
j1	0.2729	0.1018	0.2752	0.0767	0.3264	0.0602	0.3689	0.0246	0.2413	0.0328	0.4121	0.0076
j2	0.0000	0.1044	0.0000	0.0780	0.0000	0.0595	0.0000	0.0239	0.0000	0.0317	0.0000	0.0071
pi1	0.2669	0.0996	0.2720	0.0758	0.3133	0.0578	0.3352	0.0224	0.2529	0.0343	0.3660	0.0067
pi2	0.0000	0.1001	0.0000	0.0747	0.0000	0.0574	0.0000	0.0232	0.0000	0.0304	0.0000	0.0069
w1	0.2696	0.1006	0.2703	0.0754	0.3218	0.0594	0.3754	0.0251	0.2320	0.0315	0.4238	0.0078
w2	0.0000	0.0989	0.0000	0.0741	0.0000	0.0565	0.0000	0.0226	0.0000	0.0301	0.0000	0.0067
u1	-0.1288	-0.0481	-0.1372	-0.0383	-0.2105	-0.0388	-0.2549	-0.0170	-0.1343	-0.0182	-0.3181	-0.0058
u2	0.0000	-0.1564	0.0000	-0.1151	0.0000	-0.0858	0.0000	-0.0346	0.0000	-0.0463	0.0000	-0.0104
l1	-0.9919	-0.3702	-0.9909	-0.2763	-0.9828	-0.1813	-0.9802	-0.0655	-0.9909	-0.1345	-0.9697	-0.0178
l2	0.0000	-0.3145	0.0000	-0.2399	0.0000	-0.1928	0.0000	-0.0768	0.0000	-0.0979	0.0000	-0.0226
n1	-1.0000	-0.3732	-1.0000	-0.2788	-1.0000	-0.1845	-1.0000	-0.0668	-1.0000	-0.1357	-1.0000	-0.0184
n2	0.0000	-0.3260	0.0000	-0.2480	0.0000	-0.1986	0.0000	-0.0792	0.0000	-0.1011	0.0000	-0.0233
y1	-0.7769	-0.2899	-0.7757	-0.2163	-0.7396	-0.1365	-0.7056	-0.0471	-0.8135	-0.1104	-0.6779	-0.0124
y2	0.0000	-0.2420	0.0000	-0.1851	0.0000	-0.1503	0.0000	-0.0598	0.0000	-0.0753	0.0000	-0.0175
t1	-0.2890	-0.1078	-0.2927	-0.0816	-0.3637	-0.0671	-0.4205	-0.0281	-0.2532	-0.0344	-0.4892	-0.0090
t2	0.0000	-0.1264	0.0000	-0.0934	0.0000	-0.0702	0.0000	-0.0283	0.0000	-0.0379	0.0000	-0.0085
m	-0.0859	-0.1028	-0.0751	-0.0778	-0.0675	-0.0595	-0.0311	-0.0239	-0.0183	-0.0317	-0.0124	-0.0071
n	0.0000	-0.3421	0.0000	-0.2559	0.0000	-0.1958	0.0000	-0.0782	0.0000	-0.1048	0.0000	-0.0232
p	-0.2729	0.0026	-0.2752	0.0013	-0.3264	-0.0007	-0.3689	-0.0007	-0.2413	-0.0010	-0.4121	-0.0004

Table A45**Policy 5: A reduction in union power ($\omega_1=-1$)**

Variable	NSW as region 1		Vic as region 1		Qld as region 1		SA as region 1		WA as region 1		Tas as region 1	
	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR
v1	0.0380	0.0190	0.0395	0.0147	0.0466	0.0114	0.0417	0.0037	0.0416	0.0077	0.0494	0.0012
v2	0.0068	0.0190	0.0046	0.0147	0.0035	0.0114	0.0012	0.0037	0.0016	0.0077	0.0004	0.0012
c11	0.0597	0.0239	0.0623	0.0186	0.0747	0.0147	0.0679	0.0049	0.0677	0.0101	0.0825	0.0016
c21	0.0021	0.0245	0.0016	0.0189	0.0013	0.0145	0.0005	0.0047	0.0006	0.0098	0.0002	0.0015
c12	0.0597	0.0239	0.0623	0.0186	0.0747	0.0147	0.0679	0.0049	0.0677	0.0101	0.0825	0.0016
c22	0.0021	0.0245	0.0016	0.0189	0.0013	0.0145	0.0005	0.0047	0.0006	0.0098	0.0002	0.0015
g1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
g2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
j1	0.0576	0.0215	0.0607	0.0169	0.0733	0.0135	0.0674	0.0045	0.0671	0.0091	0.0823	0.0015
j2	0.0000	0.0220	0.0000	0.0172	0.0000	0.0134	0.0000	0.0044	0.0000	0.0088	0.0000	0.0014
pi1	0.0470	0.0117	0.0494	0.0061	0.0583	0.0009	0.0536	-0.0035	0.0517	-0.0091	0.0641	-0.0077
pi2	0.0000	0.0211	0.0000	0.0165	0.0000	0.0129	0.0000	0.0042	0.0000	0.0085	0.0000	0.0014
w1	0.0184	-0.0173	0.0203	-0.0228	0.0297	-0.0293	0.0278	-0.0362	0.0283	-0.0274	0.0379	-0.0453
w2	0.0000	0.0209	0.0000	0.0163	0.0000	0.0127	0.0000	0.0041	0.0000	0.0084	0.0000	0.0014
u1	-1.0088	-0.9918	-1.0103	-0.9885	-1.0194	-0.9808	-1.0189	-0.9754	-1.0164	-0.9841	-1.0284	-0.9660
u2	0.0000	-0.0330	0.0000	-0.0254	0.0000	-0.0193	0.0000	-0.0063	0.0000	-0.0129	0.0000	-0.0021
l1	0.0636	0.1948	0.0672	0.2249	0.0834	0.2636	0.0791	0.2462	0.0685	0.3066	0.0980	0.2882
l2	0.0000	-0.0664	0.0000	-0.0529	0.0000	-0.0433	0.0000	-0.0140	0.0000	-0.0272	0.0000	-0.0045
n1	0.0000	0.1323	0.0000	0.1591	0.0000	0.1833	0.0000	0.1705	0.0000	0.2403	0.0000	0.1961
n2	0.0000	-0.0688	0.0000	-0.0547	0.0000	-0.0446	0.0000	-0.0145	0.0000	-0.0281	0.0000	-0.0047
y1	0.0498	0.1526	0.0526	0.1760	0.0628	0.1984	0.0569	0.1772	0.0563	0.2517	0.0685	0.2015
y2	0.0000	-0.0511	0.0000	-0.0408	0.0000	-0.0338	0.0000	-0.0109	0.0000	-0.0209	0.0000	-0.0035
t1	-0.1701	-0.1319	-0.1848	-0.1383	-0.2326	-0.1660	-0.2084	-0.1367	-0.1882	-0.1274	-0.2495	-0.1536
t2	0.0000	-0.0267	0.0000	-0.0206	0.0000	-0.0158	0.0000	-0.0052	0.0000	-0.0105	0.0000	-0.0017
m	-0.0211	-0.0247	-0.0160	-0.0165	-0.0132	-0.0114	-0.0050	-0.0037	-0.0063	-0.0100	-0.0018	-0.0007
p	-0.0576	0.0005	-0.0607	0.0003	-0.0733	-0.0002	-0.0674	-0.0001	-0.0671	-0.0003	-0.0823	-0.0001
omega1	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000

Table A46

Policy 6: A unit increase in labour productivity ($d_1=1$)

Variable	NSW as region 1		Vic as region 1		Qld as region 1		SA as region 1		WA as region 1		Tas as region 1	
	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR
v1	0.7856	0.3921	0.7757	0.2881	0.7801	0.1902	0.7692	0.0684	0.7697	0.1424	0.7721	0.0183
v2	0.1406	0.3921	0.0905	0.2881	0.0593	0.1902	0.0230	0.0684	0.0293	0.1424	0.0066	0.0183
c11	1.2335	0.4946	1.2229	0.3645	1.2510	0.2457	1.2532	0.0898	1.2533	0.1870	1.2890	0.0247
c21	0.0432	0.5059	0.0310	0.3700	0.0219	0.2429	0.0092	0.0874	0.0116	0.1817	0.0028	0.0234
c12	1.2335	0.4946	1.2229	0.3645	1.2510	0.2457	1.2532	0.0898	1.2533	0.1870	1.2890	0.0247
c22	0.0432	0.5059	0.0310	0.3700	0.0219	0.2429	0.0092	0.0874	0.0116	0.1817	0.0028	0.0234
g1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
g2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
j1	1.1903	0.4441	1.1919	0.3324	1.2291	0.2268	1.2440	0.0830	1.2417	0.1686	1.2863	0.0235
j2	0.0000	0.4554	0.0000	0.3379	0.0000	0.2240	0.0000	0.0806	0.0000	0.1633	0.0000	0.0222
pi1	0.9713	0.2417	0.9694	0.1200	0.9770	0.0147	0.9901	-0.0649	0.9565	-0.1683	1.0010	-0.1205
pi2	0.0000	0.4366	0.0000	0.3236	0.0000	0.2163	0.0000	0.0781	0.0000	0.1566	0.0000	0.0214
w1	1.2441	0.5069	1.2450	0.4007	1.3009	0.3125	1.3398	0.1584	1.2960	0.2640	1.4085	0.1099
w2	0.0000	0.4313	0.0000	0.3207	0.0000	0.2127	0.0000	0.0762	0.0000	0.1551	0.0000	0.0211
u1	-0.5942	-0.2421	-0.6318	-0.2034	-0.8506	-0.2043	-0.9098	-0.1076	-0.7502	-0.1529	-1.0571	-0.0825
u2	0.0000	-0.6820	0.0000	-0.4983	0.0000	-0.3231	0.0000	-0.1167	0.0000	-0.2383	0.0000	-0.0324
l1	0.0375	2.7494	0.0420	3.1368	0.0696	3.0879	0.0706	3.1558	0.0506	4.4580	0.1007	3.0722
l2	0.0000	-1.3718	0.0000	-1.0389	0.0000	-0.7262	0.0000	-0.2589	0.0000	-0.5037	0.0000	-0.0704
n1	0.0000	2.7341	0.0000	3.1233	0.0000	3.0712	0.0000	3.1475	0.0000	4.4477	0.0000	3.0644
n2	0.0000	-1.4220	0.0000	-1.0743	0.0000	-0.7478	0.0000	-0.2670	0.0000	-0.5204	0.0000	-0.0727
y1	1.0293	3.1535	1.0329	3.4557	1.0524	3.3240	1.0508	3.2717	1.0415	4.6599	1.0704	3.1479
y2	0.0000	-1.0557	0.0000	-0.8016	0.0000	-0.5660	0.0000	-0.2017	0.0000	-0.3876	0.0000	-0.0547
t1	-1.3334	-0.5433	-1.3479	-0.4339	-1.4702	-0.3531	-1.5011	-0.1775	-1.4140	-0.2881	-1.6260	-0.1268
t2	0.0000	-0.5512	0.0000	-0.4047	0.0000	-0.2642	0.0000	-0.0956	0.0000	-0.1952	0.0000	-0.0264
m	-0.4363	-0.5100	-0.3133	-0.3248	-0.2209	-0.1908	-0.0931	-0.0687	-0.1171	-0.1857	-0.0280	-0.0115
p	-1.1903	0.0113	-1.1919	0.0055	-1.2291	-0.0027	-1.2440	-0.0025	-1.2417	-0.0053	-1.2863	-0.0013
d1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Table A47

Policy 7: A regional re-allocation of national government expenditure (gf₁=1, gf₂ endogenous)

Variable	NSW as region 1		Vic as region 1		Qld as region 1		SA as region 1		WA as region 1		Tas as region 1	
	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR
v1	0.0752	0.0020	0.0789	0.0022	0.0807	0.0000	0.0795	-0.0013	0.0723	0.0040	0.0858	-0.0006
v2	-0.0428	0.0020	-0.0278	0.0022	-0.0178	0.0000	-0.0066	-0.0013	-0.0077	0.0040	-0.0020	-0.0006
c11	0.0000	-0.1065	0.0000	-0.1068	0.0000	-0.1073	0.0000	-0.1038	0.0000	-0.0895	0.0000	-0.1095
c21	0.0000	0.0616	0.0000	0.0400	0.0000	0.0237	0.0000	0.0072	0.0000	0.0135	0.0000	0.0020
c12	0.0000	-0.1065	0.0000	-0.1068	0.0000	-0.1073	0.0000	-0.1038	0.0000	-0.0895	0.0000	-0.1095
c22	0.0000	0.0616	0.0000	0.0400	0.0000	0.0237	0.0000	0.0072	0.0000	0.0135	0.0000	0.0020
g1	0.3567	0.2820	0.3718	0.2978	0.3603	0.2809	0.3393	0.2612	0.3090	0.2425	0.3410	0.2567
g2	-0.1922	-0.1383	-0.1261	-0.0944	-0.0820	-0.0649	-0.0303	-0.0255	-0.0355	-0.0226	-0.0092	-0.0082
j1	0.0000	-0.1065	0.0000	-0.1068	0.0000	-0.1073	0.0000	-0.1038	0.0000	-0.0895	0.0000	-0.1095
j2	0.0000	0.0616	0.0000	0.0400	0.0000	0.0237	0.0000	0.0072	0.0000	0.0135	0.0000	0.0020
pi1	0.0000	-0.1219	0.0000	-0.1236	0.0000	-0.1233	0.0000	-0.1142	0.0000	-0.1134	0.0000	-0.1204
pi2	0.0000	0.0717	0.0000	0.0464	0.0000	0.0275	0.0000	0.0084	0.0000	0.0156	0.0000	0.0023
w1	0.0000	-0.0988	0.0000	-0.0984	0.0000	-0.0970	0.0000	-0.0951	0.0000	-0.0803	0.0000	-0.0985
w2	0.0000	0.0536	0.0000	0.0350	0.0000	0.0209	0.0000	0.0063	0.0000	0.0119	0.0000	0.0017
u1	0.0000	0.0472	0.0000	0.0500	0.0000	0.0634	0.0000	0.0646	0.0000	0.0465	0.0000	0.0740
u2	0.0000	-0.0847	0.0000	-0.0544	0.0000	-0.0317	0.0000	-0.0097	0.0000	-0.0183	0.0000	-0.0027
l1	0.0000	0.4561	0.0000	0.4533	0.0000	0.3919	0.0000	0.3394	0.0000	0.4483	0.0000	0.3275
l2	0.0000	-0.2325	0.0000	-0.1532	0.0000	-0.0946	0.0000	-0.0286	0.0000	-0.0515	0.0000	-0.0078
n1	0.0000	0.4590	0.0000	0.4567	0.0000	0.3971	0.0000	0.3444	0.0000	0.4514	0.0000	0.3345
n2	0.0000	-0.2387	0.0000	-0.1571	0.0000	-0.0967	0.0000	-0.0292	0.0000	-0.0528	0.0000	-0.0079
y1	0.0000	0.3572	0.0000	0.3549	0.0000	0.2949	0.0000	0.2443	0.0000	0.3680	0.0000	0.2290
y2	0.0000	-0.1789	0.0000	-0.1182	0.0000	-0.0737	0.0000	-0.0222	0.0000	-0.0397	0.0000	-0.0060
gr1	0.0000	-0.1161	0.0000	-0.1179	0.0000	-0.1241	0.0000	-0.1183	0.0000	-0.0962	0.0000	-0.1279
gr2	0.0000	0.0750	0.0000	0.0489	0.0000	0.0294	0.0000	0.0088	0.0000	0.0164	0.0000	0.0025
gf1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
gf2	-0.5441	-0.5288	-0.3618	-0.3622	-0.2323	-0.2375	-0.0851	-0.0877	-0.0987	-0.0921	-0.0258	-0.0275
p	0.0000	0.1681	0.0000	0.1468	0.0000	0.1310	0.0000	0.1110	0.0000	0.1030	0.0000	0.1114