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Rich Jones

John Whalley

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Rich Jones

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This paper contains preliminary findings from research work still in progress and should not be quoted without prior approval of the author.

DEPARTMENT OF ECONOMICS
THE UNIVERSITY OF WESTERN ONTARIO
LONDON, CANADA
N6A 5C2

Regional Balance Sheets of Gains and Losses from National Policies

Rich Jones
Department of Economics
University of Western Ontario
London, Canada N6A 5C2

and

John Whalley

National Bureau of Economic Research
Cambridge, Massachusetts, USA

and

Department of Economics
University of Western Ontario
London, Canada N6A 5C2

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I. Introduction

Debates on the regional impacts of national government policies often focus on accounting exercises examining differences in taxes collected from and direct expenditures made in each region of a national economy; regional balance sheets. Among other deficiencies, balance sheet approaches treat regional effects of policies as the outcome of a zero-sum game in which net benefits sum to zero. They only capture the cash component of transactions between regions rather than wider impacts on regional welfare. They ignore indirect effects, such as changes in regions' terms-of-trade. And, the reference point for assessing regional gains or losses is taken to be a situation in which policies are absent, rather than the next best alternative for the region (such as leaving the Federation).

In this paper we present an alternative approach to the evaluation of regional effects of policies which avoids most of these problems, i.e. numerical regional general equilibrium modelling (see Jones and Whalley (forthcoming)). We describe a Canadian regional general equilibrium model which we have implemented using data for 1981, and present calculations of regional effects of national policies in Canada which illustrate the differences in approach.

II. Problems with Regional Balance Sheets

Regional balance sheets can be thought of as attempts to assess regional gains or losses from national government policies through the comparison of direct regional benefits and costs. Regional benefits may include direct expenditures by national governments on regionally supplied goods and services, or cash transfers both to sub-national governments through revenue-sharing schemes and to individuals located in particular regions.[1] Regional costs usually focus on taxes paid by consumers and producers within each region.

In Canada, the regional dimensions to policy debates have been especially important since Confederation (1867), and balance sheets have a long history. At the time of the Rowell-Sirois royal commission, which led to the present system of equalization payments paid by the federal government to lower per capita income provinces, Mackintosh (1939) used such an exercise to argue that Canadian federalism was balanced across regions. More recently, in the debates on possible provincial separation, balance sheets were used by both the federal and Quebec governments to argue that Quebec would either lose or gain by taking such a step (see Leslie and Simeon (1977)).

However, despite its widespread use the balance sheet approach has many problems. Even if taxes collected and

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[1]Although commonly done, treating these equally in such a calculation is clearly inappropriate since in one case regional resources are purchased, and in the other national resources are transferred with no quid pro quo.

expenditures made in various regions (either as intergovernmental transfers or direct government expenditures in the region) can be accurately measured and appropriately recorded, they represent only a part of the regional policy interplay within federal states. With many policies no interregional flow of funds occurs, and yet significant interregional impacts result. For instance, if a national tariff allows producers of manufactures in one region to sell them to consumers in other regions at gross-of-tariff prices, an interregional transfer between exporting and importing regions occurs. Many other policies, such as taxes, price controls, and regulatory policies also produce comparable interregional effects when producers and consumers are located in different regions. This, however, is not the only difficulty.

Accommodating interregional labour mobility into balance sheet calculations is also problematic. If one assumes, for instance, that labour is perfectly mobile interregionally, it is not possible to equate a particular group of individuals gaining or losing the effects by region. When one talks of a region gaining or losing from a particular national policy, the issue is whether one means the residents of the region before the policy change (including outward migrants), only those people remaining, or all of those located in the region after the change (including inward migrants).

Another difficulty is interregional asset ownership. Even if one argues that national policies only affect interregionally

immobile factors of production, these factors may not be located in the same region as their owners. Residents in other regions, therefore, can be affected by national policies through their role as factor owners. Little or no data exists on inter-regional asset ownership patterns in any of the major OECD countries, making this especially difficult to take into account either in balance sheet or other approaches, including the general equilibrium model we report on later.

A further difficulty with balance sheet exercises is the implicit assumption that what one region gains from any national policy other regions lose, i.e., the policy impacts define a zero-sum game. Cooperation between regions in a federation may, in fact, produce a surplus (e.g. due to the gains from trade from the customs union in a federation) so that a positive rather than a zero-sum game is involved.

Balance sheet exercises also do not spell out the alternatives which are being considered to current arrangements when assessments of regional impacts of policies are being made. Especially important is the fact that any federation is a cooperative arrangement. What each region gains or loses from national policies in a federal arrangement should thus be evaluated relative to the next best alternative for that region--which may be leaving the federation. If the net effect of national policies on a region comes out negative in a balance sheet calculation, it does not necessarily follow that the region would be better off outside the federation. It is thus possible

that while a region may be perceived as a loser from a balance sheet exercise, it is a gainer when its situation is evaluated relative to not participating in the federation.

III. Analyzing Regional Impacts of Policies Using An Applied General Equilibrium Model of Canada

Because of the above difficulties listed with the balance sheet approach, we suggest that regional gains and losses from national policies be explored using explicit numerical models, and here briefly describe a regional numerical general equilibrium model of Canada we have used to calculate the regional effects of national policies. A full statement of the model in algebraic form appears in Jones and Whalley (forthcoming). The model is based on data for 1981 and is closely related to the applied general equilibrium models used elsewhere in the literature to analyze taxation and international trade policy issues (see Shoven and Whalley (1984)).

The model's main features are summarized in Table 1.[2] It is a static single period equilibrium model in which six regions (Atlantic Canada, Quebec, Ontario, Manitoba/Saskatchewan, Alberta, and British Columbia) are specified, each with a demand and production structure. A seventh region represents the rest of the world (ROW), with whom all Canadian regions engage in international trade. Both interregional and international trade in commodities occurs. Further interactions occur between regions (such as intergovernmental transfers), and the assumption

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[2]The model operates both in basic variant form, and with a series of extensions which each enhance the modelling capability, but at a cost in terms of computational complexity. These extensions are discussed both in Jones and Whalley (forthcoming), and Whalley and Trela (1986).

Table 1

Main Features of the Canadian Regional General Equilibrium Model

1.	Regional Structure:	Six Canadian Regions identified along with the rest of the world (Atlantic Canada, Quebec, Ontario, Manitoba/Saskatchewan, Alberta, B.C.).
2.	Production:	Each of six regions in Canada produces 13 goods using both primary factors and intermediate products as inputs. Thirteen goods are also produced abroad. Each of the 13 goods is assumed qualitatively different both across regions and internationally (Armington Assumption)
3.	Demands:	Final demands in each region are derived by maximizing a five-level nested CES/LES utility function subject to a regional budget constraint. Intermediate demands reflect cost minimization across sources of supply.
4.	Taxes and Transfers:	Both regional and federal levels of government are identified, each with taxes and expenditures. Intergovernmental transfers are incorporated.

5. Model Treatment of Factor Mobility:

(i)	capital services	- variant (a) capital is interregionally and intersectorally mobile, but internationally immobile. - variant (b) capital is interregionally, intersectorally, and internationally mobile.
(ii)	labour services	- assumed internationally immobile, intersectorally mobile within any region, but interregionally partially mobile; labour is homogeneous across regions, but consumers have locational preference leading to partial mobility between regions (see Appendix for more details).
(iii)	resources	- assumed internationally and intersectorally immobile.

of interjurisdictional factor immobility commonly made in international trade models is not made.

Each Canadian region has 13 industries[3], each of which produces a single output and uses both primary factors (capital services, labour services, and natural resources) and intermediate products (other commodities) as inputs. Regionally provided public services are included as one of the 13 produced goods in each region; this being the only good which is not interregionally traded. ROW also has 13 industries, but production involves only capital and labour services, with no intermediate or resource inputs.

The 13 regionally produced goods are treated as qualitatively different from similar commodities produced either in other regions or in ROW. This is the "Armington assumption" (from Armington (1969)), widely used in international trade applied general equilibrium analysis. The reasons for adopting this treatment here are the same as in the international trade models; i.e., the presence of cross hauling in interregional trade (the same good being both imported and exported by the same region). This treatment also facilitates the incorporation of interregional trade elasticity parameters into the model.

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[3]These are: agriculture; fishing and trapping; mines and quarries; food, beverages and tobacco; light manufacturing; lumber, paper and printing; metal and machinery; vehicles; energy; transportation; utilities; personal and business services; and government services.

To simplify computation only two of the three factors of production (capital services, labour services, and natural resources) are assumed to be used in production in any region. Non-energy industries use only capital and labour services; energy industries use only natural resources and labour services.

Two different factor mobility assumptions are used for capital services in the model. In variant (a) capital is treated as both interregionally and intersectorally mobile within Canada, but internationally immobile. Variant (b) differs in also allowing international mobility of capital. These two model variants are used because the literature is not conclusive as to whether perfect international mobility of capital is a reasonable assumption to make for smaller countries such as Canada, even though many economists consistently use it.[4] Resource inputs are internationally and intersectorally immobile, entering as inputs in oil and gas (energy) industries, especially in the resource-rich regions of western Canada.

In contrast, labour is assumed to be internationally immobile, intersectorally mobile, and interregionally partially mobile. Within any region, a distribution of individuals who vary by their intensity of locational preference is assumed. Individuals trade off differences in real income associated with locating and working in various regions against their preference

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[4]See the discussion in Feldstein and Horoika (1980), and Harberger (1980).

for remaining in their region of origin. The effect is that in response to changes in relative regional incomes, only a portion of any region's population migrates (see the more detailed discussion in Jones and Whalley (forthcoming)).[5]

This partial mobility treatment is used for a number of reasons, the most important being that a model in which labour is assumed perfectly mobile between regions is not particularly useful in analyzing whether, and by how much, regions gain or lose as a result of changes in national policies. This is because regions, as such, are not well defined. Similarly, treating labour as completely immobile between regions allows interregional distributional effects of taxes to be analyzed, but excludes all efficiency issues associated with the regional movement of labour.[6]

Products produced both within and outside a region appear in final demand functions for residents of each region, including ROW. Final demands reflect utility maximization, with residents maximizing nested CES/LES utility functions subject to a budget constraint. Intermediate demands, which reflect nested CES intermediate requirement functions, are based on cost

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[5]Furthermore, because of this treatment, when reporting model results showing regional impacts of policy changes one needs to distinguish between the original residents of a region who remain after a policy change, the original residents of a region including those who migrate outward following a policy change, and the remaining residents plus new arrivals.

[6]See, for instance, Boadway and Flatters (1982).

minimization across within-region and out-of-region sources of supply. These nesting structures also facilitate the incorporation of key elasticity parameters into the model, including those which affect both interregional and international trade. Budget constraints of residents within a region include capital, labour, and resource income received by residents of the region, along with intergovernmental transfers received from the federal government and federal government transfers to persons. Taxes levied within a region enter consumer budget constraints on the expenditure side.

In the absence of data on interregional patterns of asset ownership in Canada (or any other country to our knowledge), we make the strong assumption that in the base (pre-policy change) situation considered by the model, all capital and resource income originating in a region accrues to residents of that region. Thus, one of the deficiencies of conventional balance sheet analysis listed earlier, i.e. its inability to take into account interregional asset ownership, is not addressed by our model because of data deficiencies.

External sector balance appears as part of the model equilibrium conditions. The value of imports plus the net imbalance on the capital account is equal to the value of exports. As a country then, Canada is always on its budget constraint in its international transactions. The values chosen for elasticities of substitution between Canadian and foreign products in demands in each region, and the size set for ROW, jointly determine the

international import and export price elasticities which regions within Canada face. The base year data on the output of each industry in the ROW is set at ten times the value added in the same industry for all Canadian regions combined. This is done to reflect Canada's position viz-a-viz its largest trading partner, the U.S.

Into this treatment of production, demand, and interregional and international trade are integrated a series of both federal and regional (provincial) policies, all of which have regional effects. These are listed in Table 2 along with a brief description of their model treatment.

In the case of most of the policies, the model treatment is relatively straightforward. For instance, the national tariff is treated as an ad valorem tax on imports into all regions in Canada, covering both final and intermediate demands and with rates varying across commodities. The main Canadian federal and provincial taxes which have interregional effects also appear in the model in ad valorem form. In other cases, the model treatment is more complex. This is the case with energy policies, where a number of different policy components come into play.

All these policies have interregional effects and, in addition, interact with each other. The general equilibrium approach allows these effects to be calculated, and removes the need for the strong assumptions typically used in the balance sheet approach.

Table 2

Model Treatment of National Policies with Interregional Effects

Federal Policies with Major Regional Impacts	Model Treatment
Tariffs	Ad valorem tax on imports (final and intermediate demands)
Transportation Subsidies	Subsidies on grain shipments from Western Canada
Energy Policies	Provincial Royalties - ad valorem production costs
	Price Ceilings - ad valorem consumer subsidies, ad valorem producer tax
	Exploration Grants - producer subsidies
Other Federal Policies	**Model Treatment**
Non tariff trade restrictions (such as textile quotas)	Ad valorem equivalent tariff on imports
Regional Development Programs	Regional subsidies to capital use by industry within regions
Agricultural Programs	Agricultural output subsidies
Regional Policies which affect Trade and Factor Flows between Regions	**Model Treatment**
Barriers to free goods flows between regions	Ad valorem tariffs on imports from other regions in Canada
Capital market preferences used by regions	Subsidies to capital use within region
Federal-Provincial Transfers	**Model Treatment**
Equalization Payments	System of federal-provincial transfers, with payments calculated using explicit formulae
Established Programmes Financing (EPF)	Federal-provincial transfers to fund post secondary education and health care - equal per capita transfers to

	all regions
Canada Assistance Programmes (CAP)	Cost-shared regional transfers which partially fund welfare programmes
Taxes	Model Treatment
Federal Taxes	Manufacturers' sales tax modelled as ad valorem tax on both final and intermediate purchases
	Corporate taxes modelled as ad valorem taxes on capital inputs by industry by region
	Progressive federal income taxes applying to income by region
	Excise taxes modelled as ad valorem taxes on both final and intermediate purchases
Provincial Taxes	Sales, income, and corporate taxes in each region also modelled in ad valorem equivalent form

In specifying model parameter values, a calibration procedure similar to that in other applied general equilibrium models is used (see Mansur and Whalley (1984)). This uses model equilibrium conditions and base year equilibrium data to solve for the parameter values used in the model. This involves selecting parameters such that benchmark (or observed) equilibrium data can be reproduced as a model equilibrium solution. The base year 1981 micro consistent regional data set used in calibration is described in a recent paper by St-Hilaire and Whalley (1986).

Only when the model is fully specified and a policy change incorporated is the model solved for a new equilibrium. Evaluations of the regional impacts of policies follow from pair-wise comparisons between simulated (or new) equilibria and the benchmark equilibrium data to which the model is calibrated.

Elasticity estimates enter this calibration procedure by serving as identifying restrictions which allow other parameters to be calculated. Since different elasticities produce changes in other model parameters and affect model results, the selection of elasticity values is central to the model specification process.

Four sets of key elasticities enter the calibration process: international trade elasticities (on both the import and export side), elasticities determining substitution effects between energy and non-energy products in both final demands and

intermediate production in each region,[7] elasticities affecting interregional trade in commodities, and elasticity parameters which determine the size of interregional labour mobility effects.

International trade elasticity values are based on a compendium of estimates of trade elasticities due to Stern et al. (1976). Median point estimates are used for both the Canadian import demand elasticities, and the export demand elasticities which Canada faces.

A survey of energy demand elasticities by Kouris (1982) reviews existing estimates, and produces a range of energy elasticity estimates (-.1 to -.5) only slightly lower than that suggested by Thirsk and Wright (1977) for Canada. Estimates in this range are therefore used in specifying energy demand elasticity values in the model. Other commodities appear in regional demand functions as a composite non-energy product, with substitution between the component products entering the composite. Since these are less crucial for results than other elasticities in the model, a Cobb-Douglas specification is used for this level of nesting in all regions.

There are no elasticity estimates for interregional trade in Canada since there is insufficient time series data on interregional trade flows. The approach used for setting these parameters (as in Hazeldine (1979)) is to assume that

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[7]The nesting structures used in the model for both final demands and intermediate production are identical.

elasticities in interregional trade are the same as in international trade. This approach can, however, be questioned since a shares approach based on a region's share of international trade, would suggest that interregional trade elasticities would be considerably higher than international trade elasticities. Sensitivity analysis around these values is thus used.

Elasticities of substitution in value-added functions are set at 0.8 for all non-energy industries in all regions, and 0.5 for energy industries. These are a little lower than the values reported in the survey paper by Caddy (1976) and used in Piggott and Whalley (1985), Whalley (1985), and Ballard, Fullerton, et al. (1985) for non-energy industries. Identical values are used for similar industries in different regions.

Finally, in specifying labour mobility elasticities alternative values of model parameters are chosen to calibrate to various chosen elasticities of out-migration from each region with respect to interregional income differentials.[8] The base case specification involves an elasticity of 0.25 for each region.

Once specified in this way, the model can be used to compute counterfactual equilibria using the Newton method described in Whalley (1985). For large policy changes, computation of a counterfactual equilibrium can require large amounts of execution time if labour migration elasticities are large.

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[8]See the discussion in Whalley and Trela (1986).

IV. Comparing Results of General Equilibrium Computations and Balance Sheets

In Table 3, we report balance sheet calculations of the regional impacts of Canadian federal policies using the same 1981 data used in the general equilibrium model. Two different cases are considered. The first involves all federal policies, including federal expenditure programs and taxes, while the second involves only non-energy federal policies. The reason for considering these separately is the major role played by energy policies for energy-rich regions in the 1981 base year data which is used.

The balance sheet analysis in panel A of Table 3 shows the major gainer from these policies to be Atlantic Canada, with significant benefits also accruing to other lower income regions -- Quebec and Manitoba/Saskatchewan. Substantial losses are incurred by the resource-rich western provinces. A similar picture emerges from panel B, but with the exclusion of energy policies the regional impacts against Alberta are somewhat smaller.

In Table 4 the regional balance sheet calculations for all federal policies are compared to general equilibrium calculations of the regional impacts of federal tax, transfer, and expenditure programs. As can be seen from the results, the general equilibrium calculations produce significantly different results. The losses from the elimination of all federal policies are smaller for Atlantic Canada, Manitoba/Saskatchewan, and Quebec.

Table 3

1981 BALANCE SHEET CALCULATIONS OF REGIONAL IMPACTS OF CANADIAN FEDERAL POLICIES

A. All Federal Policies (All Federal Expenditure Programs and Taxes Eliminated) (All values reported as percentage of Regional Income)

	Federal Transfers to Persons (1)	Federal Inter-governmental Transfers (2)	Federal Expenditures on Goods & Services (3)	Federal Taxes Paid by Region (4)	(1)+(2)+(3)-(4) Net Gain or Loss (5)
Atlantic Canada	13.9	12.7	15.3	14.2	27.7
Quebec	8.8	6.0	5.0	14.0	5.8
Ontario	9.5	3.0	7.4	19.8	0.1
Manitoba/ Saskatchewan	9.1	5.7	7.1	15.0	6.9
Alberta	3.9	2.5	3.4	19.9	-10.1
British Columbia	8.2	3.2	5.0	19.2	-2.8

B. Non-Energy Federal Policies (All Non-Energy Federal Taxes Eliminated and Federal Expenditure Programs Scaled Down Proportionately) (All values reported as percentage of Regional Income)

	Federal Transfers to Persons (1)	Federal Inter-governmental Transfers (2)	Federal Expenditures on Goods & Services (3)	Federal Taxes Paid by Region (4)	(1)+(2)+(3)-(4) Net Gain or Loss (5)
Atlantic Canada	13.1	11.9	14.5	13.4	26.1
Quebec	8.6	5.9	4.9	13.7	5.7
Ontario	9.1	2.9	7.2	19.1	0.1
Manitoba/ Saskatchewan	5.7	3.6	4.5	9.5	4.3
Alberta	1.2	0.8	1.1	6.3	-3.2
British Columbia	7.5	2.9	4.6	17.5	-2.5

Table 4

COMPARING BALANCE SHEET CALCULATIONS TO GENERAL EQUILIBRIUM CALCULATIONS

(Regional Gains or Losses Expressed as Percentages of Regional Income1)

A. All Federal Policies

	Balance Sheet Assessment of Regional Impacts of Removing all Federal Policies	General Equilibrium Calculation of Regional Impacts of Removing all Federal Tax & Expenditure Programmes
Atlantic Canada	-27.7	-17.4
Quebec	-5.7	-3.8
Ontario	-0.1	+6.1
Manitoba/ Saskatchewan	-6.9	-4.5
Alberta	+10.2	+17.0
British Columbia	+2.9	+8.8

B. Non-Energy Federal Policies

	Balance Sheet Assessment of Regional Impacts of Eliminating All Federal Non-Energy Taxes with a Proportional Reduction in Federal Expenditure Programmes	General Equilibrium Calculation of Regional Impacts of Eliminating All Federal Non-Energy Taxes with a Proportional Reduction in Federal Expenditure Programmes
Atlantic Canada	-26.1	-15.2
Quebec	-5.7	-2.9
Ontario	-0.1	+5.4
Manitoba/ Saskatchewan	-4.3	-4.2

Alberta	+3.2	+7.8
British Columbia	+2.5	+7.7

1For the general equilibrium calculations, regional gains and losses are measured in terms of Hicksian equivalent variations.

In contrast to the small loss shown under the conventional balance sheet approach, Ontario gains approximately six percent of income, and the gains to Alberta and British Columbia are much larger. The smaller losses to losing regions and larger gains to gaining regions emphasize the inadequacy of the zero-sum game assumption implicit in balance sheets. Similar discrepancies also arise for the analysis of non-energy federal policies under panel B in Table 4.

Table 5 reports impacts on different regional groups for a case where all federal non-energy tax, transfer and subsidy programmes are replaced by a yield-preserving subsidy. Results are reported for the original residents of each region, the original residents less those who leave, and original residents less those who leave plus those who arrive. Even though the differences involved are small, this table indicates the capability of the approach in taking these differences into account. The fourth column indicates the percentage of original residents who leave as a result of the policy change for the elasticity specification used for the central case of the model.

Table 6 explores the sensitivity of model results to different elasticity parameter values for the same case considered in Table 5. The use of high interregional or international trade elasticities does not have a major impact on results. More sensitivity of results occurs with respect to migration elasticities.

Table 5

GENERAL EQUILIBRIUM CALCULATIONS OF IMPACTS OF REPLACING ALL FEDERAL NON-ENERGY TAX, SUBSIDY AND TRANSFER POLICIES BY A YIELD-PRESERVING UNIFORM RATE SUBSIDY ON ALL COMMODITIES; IMPACTS ON DIFFERENT GROUPS

(Regional Gains or Losses (Hicksian EV's) Expressed as Percentages of Regional Income)

	Effects on Original Regional Residents	Effects on Original Residents Minus Leavers	Effects on Original Residents Minus Leavers Plus Arrivers	% of Original Residents who Leave
Atlantic Canada	-16.3	-15.9	-15.9	-3.17
Quebec	-5.8	-5.8	-5.8	-2.12
Ontario	2.6	2.6	2.5	1.22
Manitoba/ Saskatchewan	-6.8	-6.7	-6.7	-1.34
Alberta	4.7	4.7	4.6	1.24
British Columbia	4.4	4.4	4.3	1.83

Table 6

SENSITIVITY ANALYSIS ON RESULTS ON REGIONAL EFFECTS ON ORIGINAL RESIDENTS FROM REPLACING ALL FEDERAL NON-ENERGY TAX, SUBSIDY, AND TRANSFER POLICIES BY A YIELD-PRESERVING UNIFORM RATE SUBSIDY ON ALL COMMODITIES

(Regional Gains or Losses (Hicksian Ev's) Expressed as Percentages of Regional Income)

Region	Case 1 from Table 5	"High" Migration Elasticity Case (0.5)	"Low" Migration Elasticity Case (0.01)	"High" Interregional Trade Elasticities (3.0)	"High" International Trade Elasticities (3.0)
Atlantic Canada	-16.3	-15.6	-17.4	-16.2	-16.3
Quebec	-5.8	-5.4	-6.7	-5.9	-5.9
Ontario	2.6	2.3	3.1	2.5	2.5
Manitoba/ Saskatchewan	-6.8	-6.4	-7.3	-6.9	-6.8
Alberta	4.7	4.5	5.0	4.3	4.7
British Columbia	4.4	4.1	4.8	4.3	4.3

Finally, Table 7 reports the regional effects produced by the model under withdrawal by various regions from Confederation. These results emphasize the differences in the evaluation of regional impact with respect to the point of comparison. Column 1 indicates, for instance, that withdrawal by Atlantic Canada from Confederation would cost the region approximately 25 percent of net income, but yield substantial net gains to all other regions. A loss is implied for all six regions, but a gain occurs for those who remain. Interestingly, in the case of withdrawal from Confederation by Ontario, major losses occur for all other regions, emphasizing the substantial benefits created for all other regions by the presence of the larger region (Ontario) in Confederation. It also emphasizes how the removal of a region, in this case Ontario, from Confederation does not define a zero-sum game and that the point of comparison significantly affects evaluations of regional gain or loss.

Table 7

GENERAL EQUILIBRIUM IMPACTS OF WITHDRAWAL FROM FEDERATION BY REGIONS1 FOR 1981 DATA

(Regional Gains or Losses (Hicksian EV's) Expressed as Percentages of Regional Income)

Impacts on	Withdrawal by Atlantic	Quebec	Ontario	Man./Sask.	Alberta	B.C.
Atlantic Canada	-25.2	1.7	-2.5	-0.9	-6.9	-1.6
Quebec	0.8	-8.7	-2.6	-0.9	-7.7	-1.6
Ontario	0.7	1.7	0.7	-1.1	-7.2	-1.8
Manitoba/ Saskatchewan	0.7	1.4	-2.6	5.4	-9.1	-1.8
Alberta	0.3	0.9	-3.2	-2.1	57.1	-1.9
British Columbia	0.6	1.2	-3.3	-1.1	-8.1	6.8
Total for six original regions	-1.1	-1.1	-1.6	-0.6	0.2	-0.7
Total for five remaining regions	0.7	1.4	-2.8	-1.2	-7.6	-1.7

1Each of these model experiments is specified by removing intergovernmental transfers and federal transfers to persons in the region, federal taxes paid, and expenditures by the federal government on goods produced by the region. Any gain or loss to the federal government produced by the model has been reallocated to the remaining regions on a proportional basis.

VI. Concluding Remarks

In this paper we present an applied general equilibrium model of Canada which we use to analyze the regional impacts of different policies in Canada. We contrast its results to balance sheet measures of policy impact. Differences in results between the conventional balance sheet and the general equilibrium calculations are emphasized, and show how various features which are either ignored or inappropriately treated under a balance sheet type approach can affect evaluations of regional policy impacts.

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