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# Fiscal Redistribution in Canada, 1994-2000

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## PRÉCIS

Les familles paient des impôts et des taxes en échange des bénéfices découlant des dépenses publiques, comme l'assurance-emploi, l'assurance-maladie ou la défense. Comme les impôts et taxes peuvent être supérieurs ou inférieurs aux bénéfices reçus, la relation entre le revenu d'une famille et les ajouts au revenu ou les déductions de celui-ci qui découlent des activités financières de l'État peut être éloignée. Cet article examine le gain ou la perte de recettes attribuable au secteur public au Canada — que l'on appelle les « redistributions financières » — à partir de la recherche économique théorique ou empirique pour attribuer les recettes et les dépenses publiques à des catégories de revenus familiaux.

La redistribution financière entre les catégories de revenus familiaux est étudiée au Canada depuis les années 80. La politique budgétaire a changé de façon significative depuis ce temps. L'un des changements les plus importants a été la consolidation des finances publiques qui a entraîné un revirement de la situation financière du Canada à partir de 1997.

Cet article tente de déterminer comment la redistribution financière a évolué au cours de la période de consolidation, de 1994 à 2000, quand les gouvernements ont adopté des mesures pour réduire les déficits et améliorer le ratio de la dette publique au produit intérieur brut. Les résultats sont semblables à ceux d'études effectuées dans les années 1980 et montrent que le système budgétaire a continué à redistribuer les recettes provenant des familles à revenu élevé aux familles à faible revenu au cours de cette période. En fait, la redistribution aux familles à faible revenu a légèrement augmenté. Cette augmentation s'explique par le caractère progressif du système budgétaire, modifié par tout changement sous-jacent dans la distribution des recettes.

## ABSTRACT

Families pay taxes in exchange for the benefits of government expenditure, such as unemployment insurance, health care, or defence. Because taxes may be either more or less than benefits received, there may be a broad relationship between a family's

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income and the additions to or deductions from income that result from the fiscal operations of government. This article examines the gain or loss in income attributable to the public sector in Canada—referred to as “fiscal redistribution”—using previous theoretical and empirical economic research to allocate government revenues and expenditures to family income groups.

Fiscal redistribution across family income groups in Canada has not been studied since the 1980s. Fiscal policy has changed markedly since that time. One of the most significant changes has been the consolidation of government finances, resulting in a turnaround in the Canadian fiscal position beginning in 1997.

This article attempts to determine how fiscal redistribution evolved during the fiscal consolidation period from 1994 to 2000, when governments introduced measures to reduce budget deficits and improve the ratio of public debt to gross domestic product. Results are similar to those of studies using 1980s data and show that the Canadian fiscal system continued to redistribute income from higher- to lower-income families during this period. In fact, the degree of redistribution in favour of lower-income families increased slightly. This increase is due to the progressivity of the fiscal system, as well as any shift in the underlying income distribution.

**KEYWORDS:** INCOME DISTRIBUTION ■ INCIDENCE ■ FISCAL POLICY ■ BENEFITS ■ CONSOLIDATION ■ TAXATION

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## INTRODUCTION

The policy decisions of governments, whether at the federal, provincial, or local level or in the public pension sector (Canada Pension Plan/Quebec Pension Plan [C/QPP]) have an impact on Canadians’ pocketbooks. Families pay taxes in exchange for the benefits of government expenditure, such as unemployment insurance, health care, or defence. Of course, the exchange is not exact for all families—taxes

may be either more or less than benefits received—and so there may be a broad relationship between a family's income and its gain or loss from the fiscal operations of government. This gain or loss may be called "fiscal redistribution." Fiscal redistribution could vary from the situation, at one extreme, where all tax revenues are collected from higher income groups and all benefits are distributed to lower income groups ("government as Robin Hood") to the other extreme, where lower income groups pay all of the taxes while higher income groups receive all of the benefits ("government as reverse Robin Hood").<sup>1</sup> This article examines where the Canadian public sector fits on this continuum by first apportioning, across all family income groups, both the amount of taxes paid and the amount of benefits received, and then attempting to determine the impact of fiscal redistribution across and between income groups.

In broad outline, there are three steps involved in such a study:

1. Government revenues and expenditures are divided into a number of broad categories (for example, personal income taxes [PIT]; health-care spending).
2. These revenues and expenditures are allocated across families, using assumptions suggested by previous theoretical and empirical economic research. For example, the benefits of health-care expenditures are allocated according to summary data on the pattern of health-care utilization by age and sex. Similar procedures are used for taxes, except that the taxes allocated include not just those paid directly by individuals but also those that affect individuals indirectly. For example, the corporate income tax is assumed to burden individuals in proportion to their receipts of dividends and realized capital gains.
3. These revenue and expenditure allocations are used to calculate families' post-government incomes (that is, incomes reduced by taxes and increased by the benefits of government expenditure). By comparing post-government incomes with some kind of neutral benchmark, measures of fiscal redistribution across and between income groups are derived.

Note that in the second step above, a number of key assumptions are made. While alternative assumptions are certainly possible, those used in the study are widely accepted as being reasonable, and so the results should have some validity.

Why do such a study now? The last such comprehensive work, using 1986 tax and income data, was done nearly 20 years ago by Ruggeri, Van Wart, and Howard.<sup>2</sup>

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1 The Robin Hood analogy is suggested by G.C. Ruggeri, D. Van Wart, and R. Howard, *The Government as Robin Hood: Exploring the Myth* (Kingston, ON and Ottawa: Queen's University, School of Policy Studies, and Caledon Institute of Social Policy, 1996). Unless otherwise stated, references to "Ruggeri et al." refer to this study; other studies by the same authors are cited *infra* notes 13 and 23.

2 *Ibid.* For a review of the work of these authors (and related studies), see Jonathan R. Kesselman and Ron Cheung, "Tax Incidence, Progressivity, and Inequality in Canada" (2004) vol. 52, no. 3 *Canadian Tax Journal* 709-89.

An exhaustive tax incidence study was also done by Vermaeten, Gillespie, and Vermaeten using 1988 data.<sup>3</sup> At the time, there were more PIT brackets, higher marginal tax rates, the manufacturers' sales tax, rising intergovernmental transfers to finance a growing health-care sector, and rising social program costs, such as unemployment insurance (UI) benefits. There have been many changes in the pattern of government revenues and expenditures since then, but perhaps the most important was the policy shift in the 1990s, when governments across Canada were reducing the size of government program expenditures by cutting deficits and paying down the debt. This period of fiscal consolidation is discussed below.

Ruggeri et al. had already suggested in 1995 that it would be interesting to address the issue of how the burden of reducing debt and deficits would be shared by various income groups. It would be difficult to cut government programs that often aid lower-income families without significantly altering the redistribution impact of the fiscal system in Canada. This may or may not be balanced with increased tax revenues, of which a greater share would be expected to be paid by higher-income families (as a recent Statistics Canada study has suggested<sup>4</sup>).

This article attempts to determine how fiscal redistribution evolved during the fiscal consolidation period between 1994 and 2000. The 1994 year was chosen for the purposes of this study because it marks a significant shift of fiscal policy at the federal level: under the newly elected Liberal Party, within a year the government had started to improve the federal budgetary balance. The 2000 year was chosen because it was the most recent year for which complete data were available. In particular, the *Provincial Economic Accounts* for 2001 had not been published at the time of this study.

The study provides an overview of the possible impact of government policies on post-government income over these seven years—a period that was dominated by fiscal consolidation. More particularly, the study examines the impact of specific components of the fiscal system on families in various income groups. It also indirectly reflects the impact of changes in the economy as those changes influence fiscal policy. For example, if the economy expands, PIT as a share of government revenues may increase. If this source is the most powerful redistributive tax vehicle, with a progressive pattern (that is, in favour of lower-income families), then a stronger economy may contribute indirectly to more redistribution toward lower-income families. However, the study is not intended to assess the direct impact of discretionary policy changes on the economic position of families, since a family's economic position may be directly influenced by various economic and demographic factors. For example, changes in the economy or demographic factors could influence family employment income.

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3 Frank Vermaeten, W. Irwin Gillespie, and Arndt Vermaeten, "Tax Incidence in Canada" (1994) vol. 42, no. 2 *Canadian Tax Journal* 348-416.

4 Patrice Martineau, *Federal Personal Income Tax: Slicing the Pie*, Analytical Paper no. 24, Statistics Canada catalogue no. 11-621-MIE (Ottawa: Statistics Canada, 2005).

A key element underlying this study is the concept of a neutral benchmark by which fiscal redistribution can be gauged. Like Ruggeri et al., this study relies on a neutral benchmark that is proportional to income (that is, government revenues and expenditures affect families in fixed proportion to their income) against which various fiscal systems (including the existing system) can be compared. The relative share adjustment (RSA) index (also used by Ruggeri et al.) is then constructed as the measure of the redistributive impact of fiscal activity.<sup>5</sup> The global RSA index, which measures redistribution for the fiscal system as a whole for all families, can be as high as 2 (the most progressive fiscal system possible, or “government as Robin Hood”) or as low as 0 (the most regressive fiscal system possible, or “government as reverse Robin Hood”). A value of 1 indicates a proportional (neutral) fiscal system.

There are three main results for the fiscal system as a whole for all families. First, the global RSA index for the central year of interest, 1997, is 1.157. This means that the fiscal system is generally progressive (that is, favours lower family income groups). The degree of deviation from proportionality can be measured by the amount of income that the existing fiscal system moves from higher to lower income groups relative to the benchmark; for example, an index of 1.157 means that this amount is about 15 percent. Second, the process of deficit elimination and debt reduction between 1994 and 2000 appears not to have been at the expense of lower income groups; in fact, there is evidence that the fiscal system moved slightly in the direction of greater progressivity, as indicated by a shift in the RSA index from 1.139 in 1994 to 1.159 in 2000. Third, the progressivity of the fiscal system was approximately the same over the study period as it was in 1986—the Ruggeri et al. finding of an index of 1.149 is very similar to the results from 1994 to 2000.

Investigation of the impact on specific family income groups, by various levels of government and by specific revenue and spending programs, suggests that PIT remained the most powerful vehicle of redistribution, followed by direct transfers to persons and government expenditures (on items such as health care). The high degree of redistribution through PIT was likely aided by the fact that the economy was strong during the late 1980s and PIT increased as a share of revenues. However, one caution about the results is that it is known that changes in measured progressivity over time can be due to changes in the underlying income distribution rather than changes in the fiscal system.<sup>6</sup>

Following this introduction, the article (1) reviews evidence of fiscal consolidation and program changes over the study period; (2) describes the full incidence

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5 For a brief description of the RSA index, see Kesselman and Cheung, *supra* note 2, at 728-30. The RSA index was created by Sandra R. Baum, “On the Measurement of Tax Progressivity: Relative Share Adjustment” (1987) vol. 15, no. 2 *Public Finance Quarterly* 166-87, and further developed by K. Cassady, G.C. Ruggeri, and D. Van Wart, “On the Classification and Interpretation of Global Progressivity Measures” (1996) vol. 51, no. 1 *Public Finance* 1-22.

6 Ruggeri et al., *supra* note 1, at 80.

framework and methodology; (3) examines redistribution under the fiscal system in 1997 and during the study period; and (4) presents conclusions.

## THE FISCAL CONTEXT

### Fiscal Consolidation

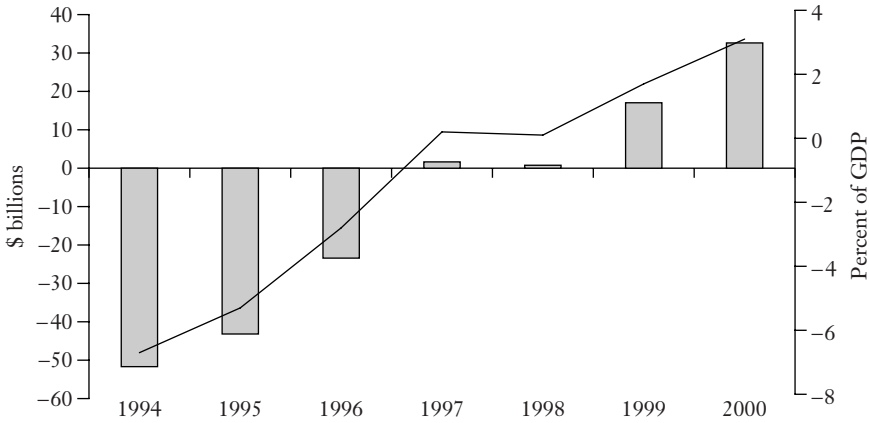
During the fiscal consolidation period, the total government budgetary balance in Canada improved from a deficit of \$51.7 billion (6.7 percent of gross domestic product [GDP]) in 1994 to a surplus of \$32.6 billion (3.1 percent of GDP) in 2000, according to the *National Income and Expenditure Accounts* (NIEA). “Total government” refers to all levels of government—federal, provincial, and local—and the public pension (C/QPP) sector. In the span of seven years, revenues rose 41 percent from \$331 billion to \$466 billion, while expenditures rose just 14 percent from \$377 billion to \$431 billion for all levels of government (federal, provincial, and local) combined. This resulted in the improvement in the budgetary balance, as shown in figure 1.<sup>7</sup> (This balance also includes the balance of the C/QPP in order to be comprehensive, but excludes intergovernmental transfers to avoid duplication within the government sector.)

Table 1 reflects changes in the actual budgetary balance as a percent of GDP, as well as changes in the primary budgetary balance (the actual balance minus public debt charges and government investment income) as a percent of GDP. Examining fluctuations in the primary budgetary balance is useful in helping isolate the combined impact of taxes and program spending on the government’s finances. During the fiscal consolidation period, the primary balance moved into a surplus position as early as 1995, with a surplus of 1.7 percent of GDP. This rose to 8.2 percent of GDP by 2000.

This progress can be attributed to discretionary action taken by government since 1994 as well as the strength in the business cycle during the 1990s. Discretionary factors over the period included structural reforms, such as legislated lower benefit rates and more stringent requirements for new entrants in the unemployment/employment insurance (UI/EI) program from 1993 to 1997. Cyclical factors influence the budgetary balance through automatic stabilizers, like PIT revenues and UI/EI expenditures, which move in a countercyclical fashion and thus helped to dampen fluctuations in aggregate demand during this period. Public debt charges and government investment income are considered to be influenced predominantly by interest rates that fluctuate with changes in the business cycle.

When the primary budgetary balance in table 1 is adjusted to include only discretionary factors, the cyclically adjusted primary balance still improves from a surplus of 0.4 percent of GDP in 1994 to 7.9 percent of GDP in 2000. Removing cyclical factors, the cyclically adjusted primary balance, as a share of GDP, increased

7 See Canada, Department of Finance, *Fiscal Reference Tables* (Ottawa: Department of Finance, October 2002).

**FIGURE 1 Total Government Budgetary Balance, 1994-2000**

Source: Canada, Department of Finance, *Fiscal Reference Tables* (Ottawa: Department of Finance, October 2002).

by 7.5 percentage points over seven years, while cyclical factors accounted for the remaining change of 1.0 percentage point. This means that roughly 85 percent of the improvement was due to discretionary factors through lower expenditures and higher revenues, and only about 15 percent was due to the business cycle.<sup>8</sup>

The significant improvement in the primary balance thus largely reflects the discretionary policy changes introduced during the fiscal consolidation period. This raises questions about the impact of the consolidation process on fiscal redistribution across family income groups during this period.

### Program Changes

By 1997, the federal government had implemented reforms to the UI/EI program that aimed to reduce the size of the program and encourage temporarily unemployed workers to return to work. At the provincial government level, the “Common Sense Revolution” launched by Premier Mike Harris in Ontario, and a parallel strategy adopted by Premier Ralph Klein in Alberta, ushered in social assistance reforms during the late 1990s that similarly aimed to reduce program spending. These cuts could be expected to lower the degree of redistribution through the fiscal system.

At the same time, other policy shifts and a strengthening economy throughout the 1990s were expected to balance out the effects of program cuts. Governments worked toward a national child benefit system under which the federal government introduced a strengthened Canada child tax benefit (CCTB), while provinces and

8 See Canada, Department of Finance, 2001 Budget, Budget Plan, December 10, 2001, 54.

**TABLE 1 Total Government Budgetary Balance as a Percent of GDP, 1994-2000**

	1994	1995	1996	1997	1998	1999	2000	Change
Actual budgetary balance .....	-6.7	-5.3	-2.8	0.2	0.1	1.7	3.1	9.8
Actual primary budgetary balance .....	-0.2	1.7	3.9	6.3	6.1	7.3	8.2	8.4
Cyclically adjusted .....	0.4	2.2	4.9	6.9	6.6	7.1	7.9	7.5
Due to business cycle .....	-0.6	-0.6	-1.0	-0.6	-0.5	0.2	0.4	1.0

Source: Canada, Department of Finance, *Fiscal Reference Tables* (Ottawa: Department of Finance, October 2002); and Department of Finance calculations.

territories redirected some spending to improve services and benefits for low-income working families with children. In addition, the federal and provincial governments together began to reinvest in health care.

On the revenue side, PIT revenues increased with economic growth; consequently, more redistribution toward lower-income families would be expected to occur through this policy vehicle. Acting as a counterbalance to this, the February 2000 federal budget provided for the reduction of the 26 percent middle-income tax rate down to 24 percent.<sup>9</sup>

## METHODOLOGY

Kesselman and Cheung<sup>10</sup> distinguish between three types of distributional studies: inequality studies (INEQ), computable general equilibrium studies (CGE), and fiscal incidence studies (FINC). INEQ studies usually focus on the impact of specific taxes on income inequality between individuals, while CGE studies focus more broadly on general impacts of fiscal activity over an individual's lifetime.<sup>11</sup> FINC studies allow for a more comprehensive look at the specific impact of fiscal activity than INEQ studies and a more detailed examination than CGE studies.

The purpose of this article is to update Ruggeri et al., the most recent FINC study in Canada. The methodology in Ruggeri et al. is selected for the current study because it allows for the most comprehensive look at detailed tax, transfer, and other expenditure provisions, and the corresponding shifting assumptions, and it encompasses all government levels. Selecting the same methodology also allows for the empirical results in the 1980s and 1990s to be compared and gauged against a neutral benchmark.

This study has four basic conceptual elements, adopted from Ruggeri et al. and, to some extent, from the 1994 study by Vermaeten et al.:<sup>12</sup>

9 Canada, Department of Finance, 2000 Budget, Budget Plan, February 28, 2000, 79-80.

10 *Supra* note 2, at 714-19.

11 For the advantages and disadvantages of this methodology, see Kesselman and Cheung, *ibid.*

12 *Supra* note 3.



1. A comprehensive selection of government revenues and expenditures from the primary balance is used to construct post-government income (in current and constant dollars).
2. These revenues and expenditures are allocated across families using the Social Policy Simulation Database and Model (SPSD/M) from Statistics Canada. The allocation rules are derived from Ruggeri et al. and Vermaeten et al.
3. The allocation rules are applied to census family groups, as opposed to individuals, households, or economic families, since it is assumed that this is where the repercussions are observed. These families are then grouped into 17 post-government income categories ranging from \$15,000 or less to over \$200,000 (in 1997 dollars). These categories are chosen because they correspond to those used in Ruggeri et al. and in more recent federal budgetary documents (such as the 2000 budget referred to above).
4. The allocations by family post-government income group are recorded and the RSA index is calculated in order to determine the extent of fiscal redistribution on a global basis (across all family groups) and on a local basis (for individual family groups). As will be discussed below, the most appropriate income base for building this index is post-government income.

### Full Fiscal Incidence Framework

FINC studies generally compare the distribution of government revenues and expenditures with family income. In partial studies, revenues and expenditures typically include taxes and transfers to persons; however, full fiscal incidence analysis requires that an even wider range of government revenues and spending be allocated to families.<sup>13</sup> In this framework, a post-government income concept is used, in which income includes money income, direct transfers from government to persons, non-money income additions, income adjustments, and government purchases on goods and services, net of tax and non-tax revenues. This income concept thus captures a majority of total government revenues and expenditures. Some budgetary components (transfers to business and sales of goods and services, some corporate income taxation, and the non-resident sector) are excluded because they are assumed not to affect family income.

This study uses the 9.0 version of Statistics Canada's microsimulation database of SPSP/M, which allows for a direct view of the impact of fiscal distribution on families.<sup>14</sup> The SPSP/M database is based on one year of survey and administration data and constructs the data for other years in conformity with sources such as the

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13 See Giuseppe C. Ruggeri, D. Van Wart, and R. Howard, *Measuring Tax Incidence Within the Framework of Fiscal Incidence*, Research Paper 93-4 (Edmonton: University of Alberta, Department of Economics, 1993).

14 The 9.0 version was the most recent version of the database available at the time this study was conducted. The current 10.2 version uses 1998 as a base year. For more details, see SPSP/M documents for that version.

NIEA. The base year for the version of SPSPD/M used in this study is 1997.<sup>15</sup> The construction of data for the other years is based on fiscal, demographic, and economic assumptions made by Statistics Canada.<sup>16</sup> The study focuses on the 1997 horizon going forward and back three years—that is, covering the years 1994-2000.

The SPSPD/M database is also adjusted in this study to match NIEA and *Provincial Economic Accounts* data, primarily for the personal and government sectors. Table 2 sets out all of the components—government and non-government—included in the calculation of post-government income in this study.<sup>17</sup>

Money income (line A) is composed of employment income and realized investment income. Employment income, which includes wages and salaries (net of supplementary income) and unincorporated business income (net of rental income), reflects NIEA data, while investment income reflects the aggregate of more detailed amounts in SPSPD/M.<sup>18</sup> Detailed tax administration data are used to estimate rental income.<sup>19</sup>

Since NIEA and *Provincial Economic Accounts* data are used, refundable tax credits are included as expenditures rather than revenues (as in the *Public Accounts*). In other words, the goods and services tax (GST) credit and the CCTB credit are not netted out of personal income taxes but rather enter into the category of “direct transfers to persons” (line B). Direct transfers to persons amounted to 13 percent of post-government income in 2000. The largest subcomponents clearly were federal elderly and C/QPP benefits, followed by UI/EI benefits and other provincial transfers.

Non-money income additions (line C) are broad and cover the subcomponents in Vermaeten et al. Gifts and inheritances are excluded, since they are assumed to

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15 The current 10.2 version uses 1998 as a base year. For more details, see SPSPD/M documents for that version.

16 Statistics Canada uses its own population estimates and labour force survey data to adjust the demographic data for age-sex distribution. As well, Statistics Canada adjusts tax and income data to account for inflation, real GDP growth, changes in tax and fiscal policy assumptions, and/or other trends affecting aggregate amounts in years other than the base year. For more details on these projections, see the SPSPD/M documents entitled “Growth and Validation Guide” and “Addendum.” These demographic, economic, and fiscal assumptions are used in this study, since they are publicly available; however, the assumptions can be changed at the discretion of the SPSPD/M user.

17 To compare this calculation of post-government income with the calculation for 1986, see table A-1 in Ruggeri et al., *supra* note 1. The results in this study are not converted into 1986 dollars because the data for that year do not exist in the SPSPD/M version used in this study.

18 “Investment income” here includes realized capital gains to persons, dividend income to persons, interest income to persons (including net rental income for high income earners), other investment income to persons (including net rental income for income earners other than high earners), and other income (including pension income).

19 See Revenue Canada, *Tax Statistics on Individuals: 1994 Tax Year* (Ottawa: Revenue Canada, 1996), basic table 2; and Canada Revenue Agency, *Income Statistics 2002: 2000 Tax Year* (Ottawa: CRA, 2002), basic table 2.

**TABLE 2 Calculation of Post-Government Income, 1994-2000\***

	1994	2000	Change	Change
		<i>\$ billions</i>		<i>%</i>
Employment income . . . . .	401.2	547.2	146.0	36.4
Investment income . . . . .	<u>76.5</u>	<u>87.8</u>	<u>11.3</u>	<u>14.8</u>
A. Total money income . . . . .	477.7	635.0	157.3	32.9
UI/EI benefits . . . . .	15.0	9.6	-5.4	-36.0
OAS/GIS/SA benefits . . . . .	20.2	23.8	3.6	17.9
CCTB credit . . . . .	5.3	6.6	1.3	25.1
GST credit . . . . .	2.8	3.0	0.1	5.0
Other federal transfers . . . . .	6.9	10.7	3.8	55.1
Provincial social assistance . . . . .	12.2	9.3	-2.9	-23.6
Other provincial transfers . . . . .	12.6	18.7	6.0	47.9
Local government transfers . . . . .	3.9	3.4	-0.5	-13.0
C/QPP income . . . . .	<u>19.6</u>	<u>25.4</u>	<u>5.8</u>	<u>29.6</u>
B. Total direct transfers to persons . . . . .	98.5	110.4	11.9	12.1
Imputed rent . . . . .	23.3	28.7	5.4	23.3
Imputed interest income . . . . .	6.7	10.3	3.5	52.5
Net accrued capital gains . . . . .	<u>38.8</u>	<u>59.9</u>	<u>21.1</u>	<u>54.5</u>
C. Total non-money income additions . . . . .	68.8	98.9	30.1	43.7
Payroll tax adjustments . . . . .	49.0	61.3	12.3	25.0
Corporate income tax adjustments . . . . .	17.4	35.4	18.0	103.6
Property tax adjustments . . . . .	4.6	5.4	0.8	18.3
Transfers from corporations to persons . . . . .	0.4	0.8	0.4	110.9
Government transfers to corporations . . . . .	<u>9.6</u>	<u>11.0</u>	<u>1.4</u>	<u>14.1</u>
D. Total adjustments to income . . . . .	81.0	113.9	32.9	40.7
Federal health purchases . . . . .	1.0	2.2	1.2	125.1
Federal education purchases . . . . .	1.0	2.2	1.2	120.8
Federal housing, transport, and protection . . . . .	18.1	17.3	-0.8	-4.3
Other federal purchases . . . . .	22.0	24.2	2.2	9.8
Provincial health purchases . . . . .	54.2	71.9	17.7	32.7
Provincial postsecondary education purchases . . . . .	12.1	12.7	0.6	5.1
Provincial housing, transport, and protection . . . . .	18.7	20.3	1.6	8.5
Other provincial purchases . . . . .	22.3	25.9	3.6	16.2
Local health purchases . . . . .	0.9	1.0	0.1	11.3
Local elementary/secondary education purchases . . . . .	34.1	33.4	-0.7	-2.0
Local housing, transport, and protection . . . . .	15.8	18.8	3.0	19.1
Other local purchases . . . . .	17.4	23.4	6.0	34.7
C/QPP purchases . . . . .	<u>0.2</u>	<u>0.4</u>	<u>0.1</u>	<u>49.8</u>
E. Total government purchases . . . . .	217.8	253.8	36.0	16.5

(Table 2 is concluded on the next page.)

TABLE 2 Concluded

	1994	2000	Change	Change
		<i>\$ billions</i>		%
Personal income taxes .....	100.3	143.5	43.2	43.0
Corporate income taxes .....	17.4	35.4	18.0	103.6
Royalties .....	6.9	14.2	7.3	105.4
Payroll taxes .....	25.9	26.7	0.9	3.3
Property taxes .....	28.2	33.3	5.1	18.3
Other indirect taxes (including GST and PST) ...	82.5	105.9	23.3	28.2
C/QPP contributions .....	12.9	25.3	12.3	95.4
F. Total revenues .....	274.1	384.2	110.1	40.2
<hr/>				
G. Post-government income				
[(A + B + C + D + E) - F] .....	669.6	827.7	158.1	23.6

\* Dollar amounts are calculated in 1997 dollars.

be in exchange for other gifts and benefits received. These subcomponents are derived using SPSD/M data, stock survey data,<sup>20</sup> and growth variables from Statistics Canada. The largest percentage increase in non-money income additions was in net accrued capital gains (including those related to principal residence and financial assets of persons, as well as financial assets of trustee pension funds). Accrued capital gains are net of realized capital gains in order to avoid double counting (since realized capital gains are counted as investment income and included in total money income at line A).<sup>21</sup>

Adjustments to income (line D) are added to income based on tax-shifting assumptions. This category reflects a mix of the adjustments made in previous studies. Payroll taxes on persons are shifted as in previous studies. However, direct taxes on corporations are allocated entirely to capital, reflecting the progressive case in Ruggeri et al., rather than their more regressive case of 50 percent to consumer and 50 percent to capital. Since both Ruggeri et al. and Vermaeten et al. used a more detailed base case for a more regressive allocation of property taxes, this is also used in this study.

Government purchases (line E) are based on gross current expenditures on goods and services by all three levels of government and the C/QPP sector, plus non-financial capital formation. These purchases include social expenditures, such as health and postsecondary education. Using financial management system data,

20 Statistics Canada, *The Assets and Debts of Canadians: An Overview of the Results of the Survey of Financial Security*, catalogue no. 13-595.

21 *Supra* notes 19 and 20. Tax administration data from the CRA are used to estimate the realized capital gains on principal residence and financial assets of persons. In the case of trustee pension plans, the realized profits of net securities from their financial statements are used. Statistics Canada, *Trusteed Pension Funds, Financial Statistics*, catalogue no. 74-201.

total spending is broken down into six broad subcategories for each level of government. Intergovernmental transfers (such as the Canada health and social transfer [CHST]) are not explicitly identified in this study, but are included in the various subcomponents (for example, provincial health purchases). Provincial health spending is the largest purchase item and accounts for about 50 percent of the increase in all purchases.

The last step in calculating post-government income is to deduct total revenues (line F) from the aggregate of lines A through E. Revenue amounts for specific subcomponents are not adjusted to include refundable tax credits; for example, under "other indirect taxes," revenue from the GST is gross of the GST credit. It should be noted that while the totals for transfers to persons and government purchases shown in table 2 match the amounts in the Department of Finance's *Fiscal Reference Tables*, the aggregate revenue amount is somewhat lower (by 12.6 percent in 2000), given that only 70 percent of direct taxes on corporations are included in this study.<sup>22</sup> In absolute terms, the increase in PIT revenue over the study period was roughly one-third of the increase in employment income. As a percentage of total revenues, PIT revenue increased from 36.6 percent in 1994 to 37.4 percent in 2000. Corporate income taxes (CIT) increased from 6.3 percent of total revenues in 1994 to 9.2 percent in 2000.

Finally, table 2 shows that, overall, post-government income increased by 23.6 percent from \$669.6 billion in 1994 to \$827.7 billion (approximately 78 percent of GDP) in 2000 (line G).

### Allocation Rules

The appendix to this article outlines the rules used to allocate revenue and expenditure components across families. As noted earlier, these rules are based on studies by Ruggeri et al. and Vermaeten et al.

The rules for allocating money income are similar to those used in the previous studies. The rules for non-money income reflect those used in Vermaeten et al. Because non-money income is allocated broadly across middle-income families, the resulting incidence ratios may be more regressive than in Ruggeri et al., which excluded some components of non-money income.

Where these studies differed in the allocation of government revenue and expenditure components (transfers and purchases), a general rule that was simple and consistent with the small open economy assumption used in both Ruggeri et al. and Vermaeten et al. was adopted in this study.<sup>23</sup>

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22 Also, the effects of debt-servicing charges and the deficit/surplus are not examined directly in this study. It is assumed that these fiscal components would be treated in a manner that is proportional to post-government income, and therefore the value of the RSA measures would remain the same.

23 For a discussion of shifting assumptions, see G.C. Ruggeri, D. Van Wart, and R. Howard, "The Redistributive Impact of Taxation in Canada" (1994) vol. 42, no. 2 *Canadian Tax Journal* 417-51, and Vermaeten et al., *supra* note 3.

Adapting the approach in Ruggeri et al., broad rules were also adopted for the allocation of government expenditures. Direct transfers to persons were allocated in a straightforward manner based on SPSP/M. Health-care spending was allocated to the population by age and sex profiles based on CIHI data.<sup>24</sup> Similarly, all types of education were allocated by age of children in families. Elementary and secondary education spending was allocated equally to families with children aged 5 to 17, and postsecondary education spending to children aged 18 to 24. Housing was allocated as in Ruggeri et al., and an equal per capita rule was adopted for transportation, protection, and any miscellaneous transfers and purchases.

### Family Income Classes

This study focuses on the census family unit rather than the individual, the economic family, or the household. Census family consists of a head of the family, that person's spouse, and any children who are not married, or not currently cohabiting with a spouse or common-law partner, living in the same dwelling. (Children who are postsecondary education students are typically included in the census family unit.) This is a smaller family unit than the economic family, which includes anyone who is blood-related (such as grandparents). The census family was chosen because it was assumed that this is the context for most fiscal policy decisions.<sup>25</sup>

In this study, any intertemporal comparisons involving family income classes are made in constant dollars, using 1997 as the base year (the base year for the SPSP/M data). The conversion to 1997 dollars for other years is based on the consumer price index used in the SPSP/M (9.0 version). Thus, for example, for the lowest family income category, which is income of \$15,000 or less in 1997 dollars, the equivalent threshold in current dollars is \$14,219 in 1994 and \$15,822 in 2000.

### Measures of Fiscal Redistribution

The term "redistribution" has several common usages. In this study, it refers to the departure from a neutral benchmark—that is, one having no impact on post-government income distribution.<sup>26</sup> For example, a government could collect the same aggregate amount of taxes by adopting either of two approaches: (1) it could impose tax in proportion to income; or (2) it could vary the effective tax rate for

24 See Canadian Institute for Health Information, *National Health Expenditure Trends, 1975 to 1999* (Ottawa: CIHI, 2000), table E, 1999 data.

25 See Ruggeri et al., *supra* note 1, for reasons against using the household as the unit of analysis.

26 The neutral benchmark is relative to post-government income, and the measure of fiscal redistribution is based on post-government income. Except where it is important to highlight this point, however, the term "income" is used to mean post-government income for the remainder of this article. Note that the calculations presented in subsequent tables and figures are based on the distribution of post-government income.

different income categories. The first approach would achieve distributional neutrality; the second could result in redistribution.

When post-government income under the existing fiscal system is compared with the benchmark, any deviations or gaps imply that redistribution is either in favour of lower-income families or in favour of higher-income families. If the distribution of post-government income favours lower income groups, the existing tax system is described as progressive. If the distribution favours higher income groups, the existing tax system is described as regressive.

It is important to note that the term “progressivity” refers to the structure of the fiscal system, while redistribution involves the interaction between progressivity and the income distribution. This is important when comparing fiscal systems across years, because the underlying income distribution may shift during this time. For example, if inequality in the income distribution increased from 1994 to 2000, a higher degree of redistribution could be generated by a fiscal system that had become less progressive. The degree of redistribution depends on the progressivity of the fiscal structure and the degree of income inequality to which it is applied.

Within the full fiscal incidence framework described above, the RSA index used by Ruggieri et al. is adopted as the measure of the redistributive impact of the fiscal system. This measure allows comparisons of post-government income distribution for different years, both across and between income classes, for specific budgetary components or for the entire fiscal system, and for the various government/pension regimes.

The local RSA measure,  $RSA_i$ , reflects the ratio of the actual share of income for a particular family income class to the share for that class under the distributionally neutral benchmark. This measure is related to the effective average tax rate by the following formula:

$$RSA_i = (1 - t_i) / (1 - t), \quad (1)$$

where  $t_i$  is the effective average tax rate for the  $i$ th income group. The denominator reflects the effective average tax rate ( $t$ ) under a distributionally neutral (or proportional to income) tax regime. Thus, if an income group ( $i$ ) pays a greater share of taxes than it would under the benchmark,  $RSA_i$  will be less than 1—for example, 0.95—and members of the group would gain approximately 5 percent of their (post-government) income if the existing tax system were replaced by the neutral benchmark.

The incidence ratio in equation 1 can be expanded to include direct transfers to persons ( $tr$ ) and government purchases ( $g$ ). The local RSA measure for the entire fiscal system can then be expressed as

$$RSA_i = (1 + tr_i + g_i - t_i) / (1 + tr + g - t), \quad (2)$$

where  $tr$  and  $g$  are transfers to persons and government purchases, respectively, divided by income.

The global RSA measure,  $RSA_G$ , aggregates the local measures ( $RSA_i$ ) for all income groups (1 to  $n$ ) and is based on weights ( $w$ ) of ordered (post-government) income shares, as follows:

$$RSA_G = \sum_{i=1}^n w_i RSA_i. \quad (3)$$

Where  $w$  is based on the share of (post-government) income ( $y$ ) of the  $i$ th income group and the  $j$ th income group with a higher proportion of this income,

$$w_i = \frac{y_i}{\sum_{i=1}^n y_i} + 2 \sum_{j=i+1}^n \frac{y_j}{\sum_{j=i+1}^n y_j}. \quad (4)$$

Families were ordered by increasing post-government income from 1 to  $n$ . Similar to the local RSA, the global RSA can be calculated for any budgetary component(s) and for the entire fiscal system.

The global RSA index measures the overall degree of redistribution under the existing fiscal system relative to the benchmark. A global RSA index that exceeds (is less than) 1 indicates redistribution in favour of lower (higher) income groups. If a distributionally neutral fiscal system were adopted in place of the existing system, lower (higher) income groups would lose (gain) income to the extent of the increase (decrease) in income from redistribution. The higher (lower) the global RSA index, the higher the degree of redistribution toward lower (higher) income groups. The existing system is considered to be progressive (regressive) overall compared with a distributionally neutral fiscal system. However, any comparisons of the progressivity (regressivity) of the existing fiscal system as it changes across various years must take into account the fact that the underlying income distribution also may have shifted.

## EMPIRICAL RESULTS

The study uses 1997 as the base year for comparing fiscal redistribution over time, because this is the base year for the SPSP/M data. The study results for 1997 are thus based on actual observations, while the results for 1994-1996 and 1998-2000 reflect projections and assumptions made by Statistics Canada.<sup>27</sup>

The key result in this study is that there was redistribution toward lower-income families in the 1990s. This result reflects the progressivity of the fiscal system with respect to PIT, health-care spending, elderly benefits, and pensions. In fact, the degree of redistribution appears to have increased slightly since the 1980s, particularly during the 1994-2000 fiscal consolidation period. This may lead to the conclusion

27 See supra note 16 and accompanying text.



that the fiscal system was more progressive in 2000 than in 1994. However, intertemporal results, and indeed any of the following results compared across various years, can be so interpreted only if the underlying income distribution remained constant. As already outlined, this distribution may have shifted slightly in favour of families in the highest income categories during the fiscal consolidation period.

### **Redistribution Across All Family Income Groups**

Table 3 shows that for the three largest components of post-government income—taxes, purchases, and direct transfers to persons—there was redistribution in favour of lower-income families in 1997. The overall global RSA index of 1.157 indicates that about 15 percent of (post-government) income was redistributed from higher to lower income groups; that is, under a distributionally neutral fiscal system, post-government income would have been about 15 percent higher for higher-income families and 15 percent lower for lower-income families. Other trends include the following:

- The global RSA index was slightly higher for the federal fiscal regime (1.072) compared with the provincial (1.066), C/QPP (1.015), and local (1.008) regimes.
- Across all sectors (government and pension), the RSA for the tax component (which includes C/QPP contributions and royalties) was more than twice (1.100) the RSA for either of the expenditure components (1.048 for transfers to persons and 1.037 for purchases). Note that the difference between the indices for taxation and transfers to persons would be even larger if the GST credit and the CCTB credit were netted out of PIT and excluded from direct transfers. (See the text accompanying table 2.) The global RSA index for transfers to persons and purchases combined was 1.071.
- The single largest contribution to redistribution in favour of lower-income families came from federal taxation (1.039), followed by provincial government purchases (1.032), and federal transfers to persons (1.025).

These results reflect the measures implemented in the first year of the five-year tax reduction plan introduced in the 2000 federal budget.<sup>28</sup> Specifically,

- full indexation was restored to the PIT system, retroactive to January 1, 2000;
- the middle tax rate fell to 24 percent from 26 percent in July 2000;
- the 5 percent deficit reduction surtax was eliminated on incomes up to about \$85,000 and reduced for all others in July 2000; and
- the maximum annual payment under the CCTB was increased by about \$250 per child.

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28 *Supra* note 9.

**TABLE 3** Redistribution Through the Tax and Expenditure Systems by Fiscal Regime, Global RSA Index, 1997

	Transfers to persons	Purchases	Taxes	Fiscal system
Federal .....	1.025	1.009	1.039	1.072
Provincial .....	1.012	1.032	1.021	1.066
Local .....	1.001	1.002	1.006	1.008
C/QPP .....	1.014	1.000	1.001	1.015
All regimes .....	1.048	1.037	1.100	1.157

Note: These indices are not additive. Calculations in the last two columns, for example, are based on equations 1 and 2.

Overall, the general findings are similar to those of Ruggeri et al. for 1986; their global RSA index was only slightly lower at 1.149. The largest deviation from the neutral benchmark in 1986 was for taxes (1.085), followed by purchases (1.046), and transfers to persons (1.037). Thus, the major difference between 1986 and 1997 is that transfers to persons are now slightly more redistributive than purchases. In both 1986 and 1997, total spending is less redistributive than the tax system. The comparison of these results reflects the interaction of the progressivity of fiscal components and the underlying income distribution.

Ruggeri et al. also found that the redistribution was slightly more progressive (that is, in favour of lower-income families) for the federal fiscal regime than for the other regimes. However, Ruggeri et al. included C/QPP data in the federal government sector. The current study disaggregates the C/QPP data because the federal and provincial governments are joint stewards of the CPP, and the QPP is administered by the Quebec government. If the C/QPP regime (1.015) is removed, the federal fiscal regime is still more progressively redistributive than its provincial counterpart.

The SPSPD/M incorporates dynamic adjustments (for example, demographic and economic) to conform to other data sources (such as the NIEA) for years preceding and following the base year. This study also calculates results for three years back to 1994 and three years forward to 2000. Any interpretation of these intertemporal results must take into account the interaction of the progressivity of the fiscal system and any shift in the underlying income distribution.

Figure 2 shows that, for all regimes and all budgetary components combined, the degree of redistribution was stable during the consolidation period or increased slightly in favour of lower-income families. The global RSA index was 1.139 in 1994 (even lower than the RSA reported by Ruggeri et al. for 1986), rising to 1.159 by 2000. This pattern is consistent with the observation that the greatest improvement in the primary balance occurred between 1994 and 1997 (see table 1).

Figure 2a shows the pattern of redistribution through the tax and expenditure systems from 1994 to 2000. As discussed above (see table 3), in 1997 the tax system contributed by far the greatest share of redistribution (1.100)—more than double the share for either transfers to persons (1.048) or purchases (1.037). This ranking

of the three components and a similar spread between the contributions of taxes and expenditures are observed throughout the 1994–2000 period.

Figure 2a also shows a slight increase in redistribution from 1994 to 2000. Again, taxes contributed the largest share of the increase, with a global RSA index of 1.080 in 1994 and 1.093 in 2000. The global RSA index for purchases also increased, but by less, from 1.035 in 1994 to 1.041 in 2000, while the index for transfers to persons was almost unchanged from the beginning to the end of the period. For both types of expenditure combined, the global RSA index rose from 1.068 in 1994 to 1.075 by 2000. Thus, redistribution through the tax system remained higher than redistribution through the expenditure system.

Figure 2b illustrates the respective contributions to redistribution under the government and C/QPP regimes. As also shown in table 3, in 1997 the global RSA indices were 1.072 for the federal government, 1.066 for provincial government, 1.015 for the C/QPP sector, and 1.008 for local government.

While the RSA index remained relatively stable for provincial and local governments and the C/QPP, there was a slight upward trend at the federal level. The global RSA index for the federal fiscal system increased from 1.064 in 1994 to 1.074 in 2000, indicating increased redistribution in favour of lower-income families.

Figure 3 provides more details on these overall results by plotting the global RSA indices for the major budgetary components and by the government and C/QPP regimes, by year. Figure 3a shows that the redistribution through federal taxation accounted for more than half of redistribution through the federal fiscal system in 1997. Again, as reported in table 3, in 1997 the global RSA index for federal taxation was 1.039, compared with 1.025 for transfers to persons and 1.009 for purchases.

Figure 3a also shows that any increase in the global index of redistribution through the federal fiscal system occurred for federal revenue collections, particularly in 1997. While the indices for transfers to persons and purchases remained stable, the global RSA index for taxes increased from 1.030 in 1994 to 1.040 in 2000.

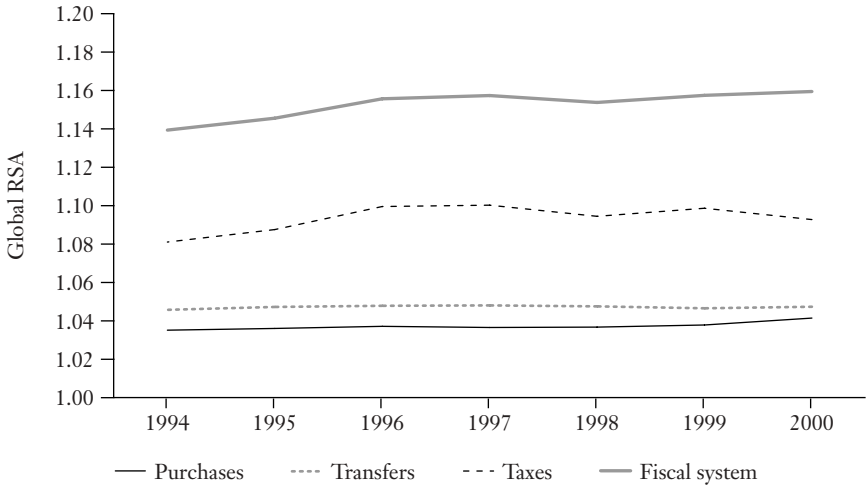
Figure 3b shows that in 2000 the global RSA index for provincial purchases (1.032) was larger than the 1997 index for either taxes (1.021) or transfers (1.012) (see table 3). All three indices remained relatively constant from 1994 to 2000. The largest shift occurred as the global RSA index for taxes rose from 1.019 in 1994 to 1.023 in 1996, then (with provincial tax reforms) fell to 1.017 by the end of the period.

Figure 3c shows the low and stable redistributive impact of all major local government revenue and spending programs. All global RSA indices are between 1.000 and 1.010 throughout the fiscal consolidation period, indicating that any changes in the major budgetary components did not contribute significantly to fiscal redistribution at the local level.

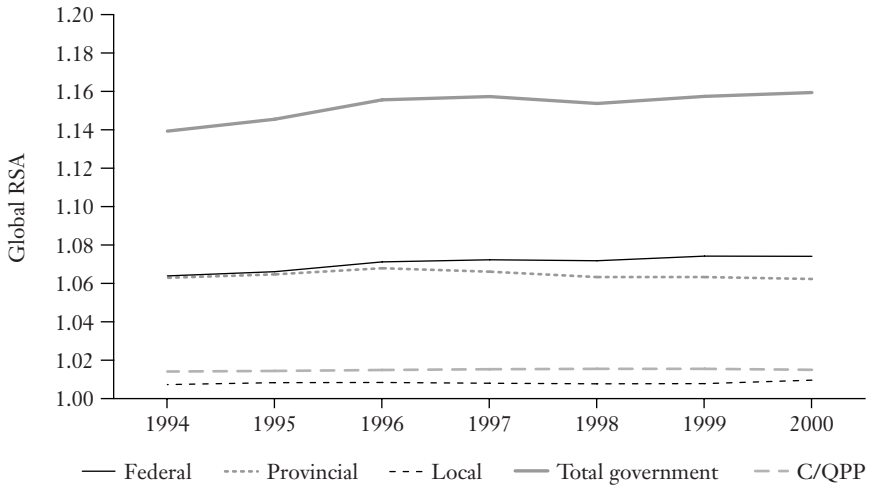
Figure 3d shows slightly more redistribution through the C/QPP as compared with local government. This is due to the underlying income distribution and the progressivity of C/QPP benefits, which are based on contributions roughly proportional to income.

**FIGURE 2 Redistribution Through the Tax and Expenditure Systems and by Fiscal Regime, Global RSA Index, 1994-2000\***

a. Tax and Expenditure Systems (All Regimes Combined)



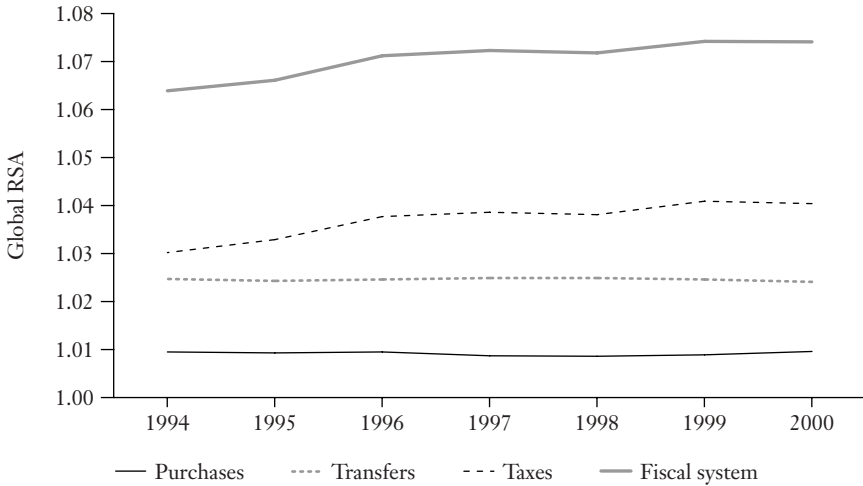
b. Government and C/QPP Regimes (All Budgetary Components Combined)



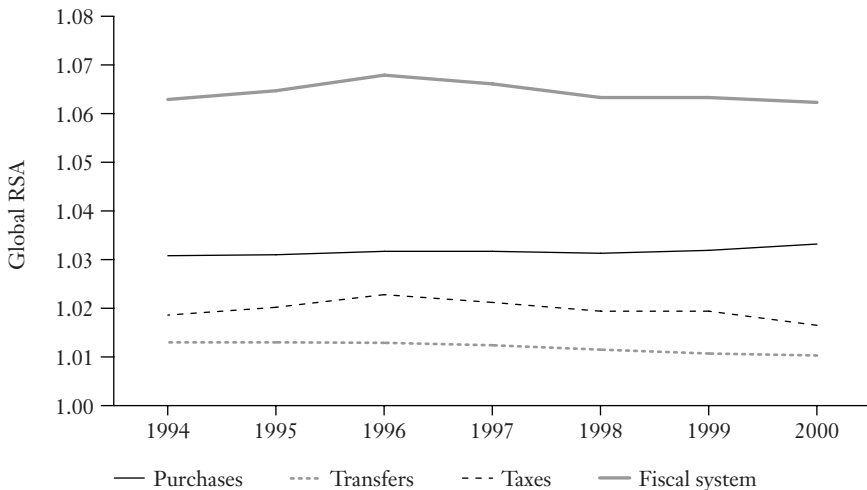
\* Post-government income calculated in 1997 dollars.

**FIGURE 3 Redistribution Through the Tax and Expenditure Systems, by Level of Government and C/QPP, Global RSA Index, 1994-2000\***

a. Federal Government



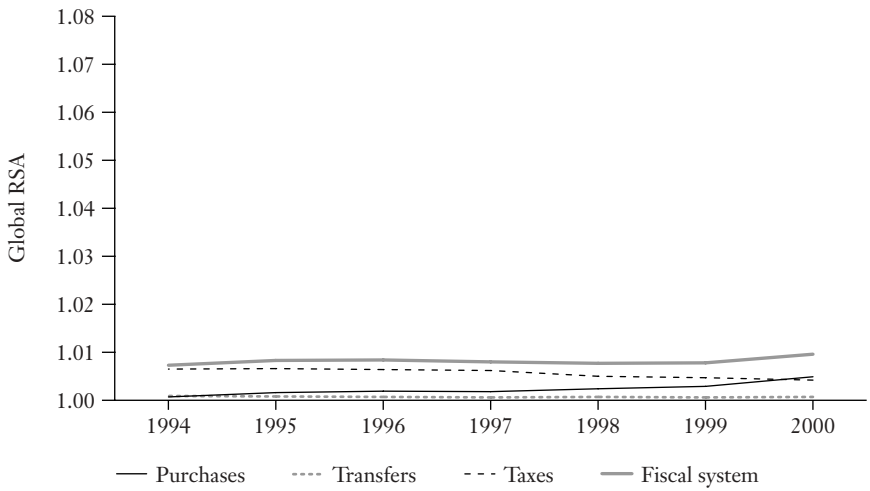
b. Provincial Government



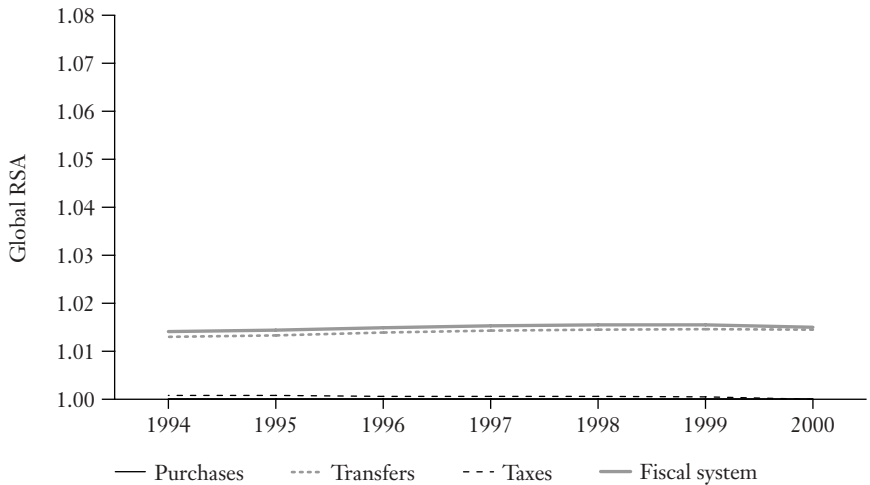
(Figure 3 is concluded on the next page.)

**FIGURE 3 Concluded**

c. Local Government



d. C/QPP



\* Post-government income calculated in 1997 dollars.

To summarize, building on the previous study by Ruggeri et al., the extent of redistribution across family income groups seems to have remained relatively stable between 1986 and 2000. Redistribution was higher through the tax system than through either transfers to persons or other government spending, such as health-care spending. There was a higher degree of redistribution through the federal government than through the provincial government, and this gap grew slightly between 1994 and 2000. The increase in redistribution was due to the underlying income distribution and the progressivity of the federal tax system.

The next stage of the analysis is to determine the impact of redistribution on particular family income groups.

### **Redistribution Between Family Income Groups**

With a global RSA index of 1.157, redistribution in 1997 favoured families in lower income groups. This section examines in more detail the redistribution for each of the 17 family income groups.

Figure 4a shows that the local RSA index for the entire fiscal system ranged from 1.628 for family incomes of \$15,000 or less to 0.266 for family incomes greater than \$200,000 in 1997. This means that the existing fiscal system generated redistribution from higher-income families to lower-income families. Adopting a neutral fiscal system would result in a loss of about 60 percent of post-government income for families in the lowest income group and a gain of about 70 percent for families in the highest income group. The breakeven income level was roughly \$65,000, so that redistribution was in favour of all families with income below this level.

Figure 4a also shows that the tax system was the most redistributive in favour of the lower income groups, followed by transfers to persons and then purchases. In contrast, purchases were the least redistributive in the higher income groups, followed by transfers and taxes.

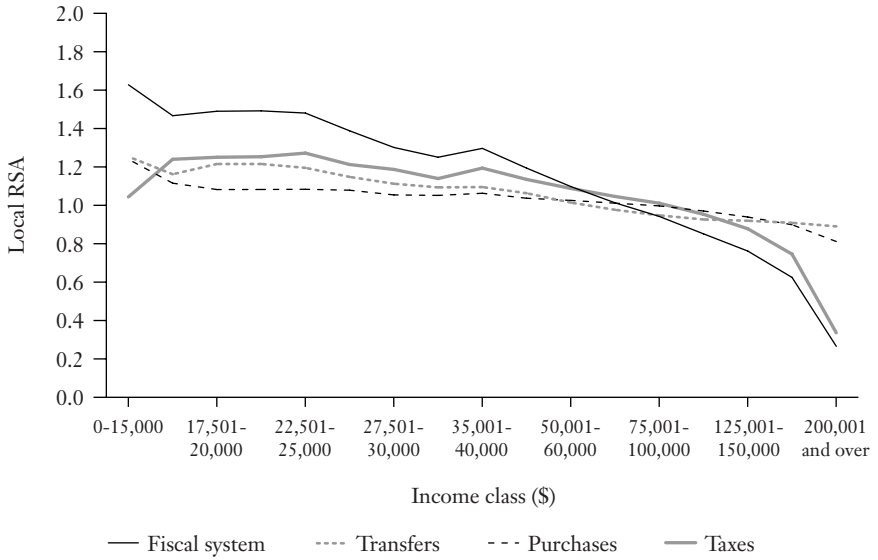
The breakeven income level varied considerably by component, and this played a large role in the level of redistribution. The breakeven income level ranged from about \$90,000 for the tax system and purchases to \$60,000 for transfers. Thus, redistribution through the tax system and purchases toward middle income groups up to about \$90,000 was balanced with less redistribution through transfers (relative to the benchmark) for families with income between \$60,000 and \$90,000.

Figure 4b shows that the federal regime was the most redistributive in favour of lower income groups, followed by the provincial, C/QPP, and local regimes. Local government was also the least redistributive in the higher income groups, followed by the C/QPP, provincial, and federal regimes.

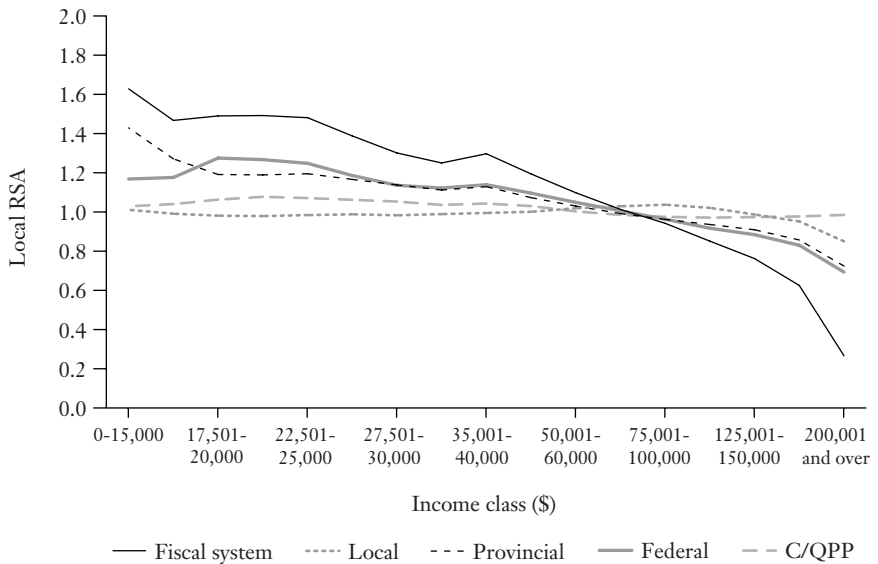
The breakeven income levels by level of government in figure 4b vary less than in figure 4a, ranging from \$51,000 for provincial governments and the C/QPP to \$65,000 for the federal government. Families receiving C/QPP benefits are, on average, in lower income groups than families benefiting from the federal fiscal regime. The index for local government hovered around the benchmark across all income groups.

**FIGURE 4 Redistribution Through the Tax and Expenditure Systems and by Fiscal Regime, by Income Class, Local RSA Index, 1997**

a. Major Components (All Levels of Government Combined)



b. Fiscal Regimes (All Budgetary Components Combined)





Since the base year used by Ruggeri et al. was 11 years earlier, the breakeven income level in their study was lower—roughly \$35,000 in 1986 as opposed to \$65,000 in 1997 for the entire fiscal system. Discounting inflationary factors, it is possible that, on average, there was more redistribution in favour of a broader range of income groups in 1997. It also seems that there was slightly more redistribution from higher income groups to lower income groups in 1997. If the system in 1986 were replaced by a neutral system, families with income below \$20,000 would lose more than 50 percent of their (post-government) income, while families at the top end would gain about 30 percent. It seems that the fiscal system has become more progressive, with the gains from redistribution for lower income groups (60 percent) and the losses at the top end (70 percent) being larger in 1997 than in 1986. However, this interpretation of the results must take into account the interaction of the progressivity of the fiscal system and any shift in the underlying income distribution between 1986 and 1997.

It is more straightforward to compare the local RSA indices within the framework of this study. Figure 5 shows that the redistributive impact of local government was consistent across all income groups at both the beginning and the end of the fiscal consolidation period: redistribution increased slightly for all family income groups. The gap between the benchmark and families in lower income groups increased slightly, while the gap decreased slightly for families with income of \$65,000 or more (in 1997 dollars).

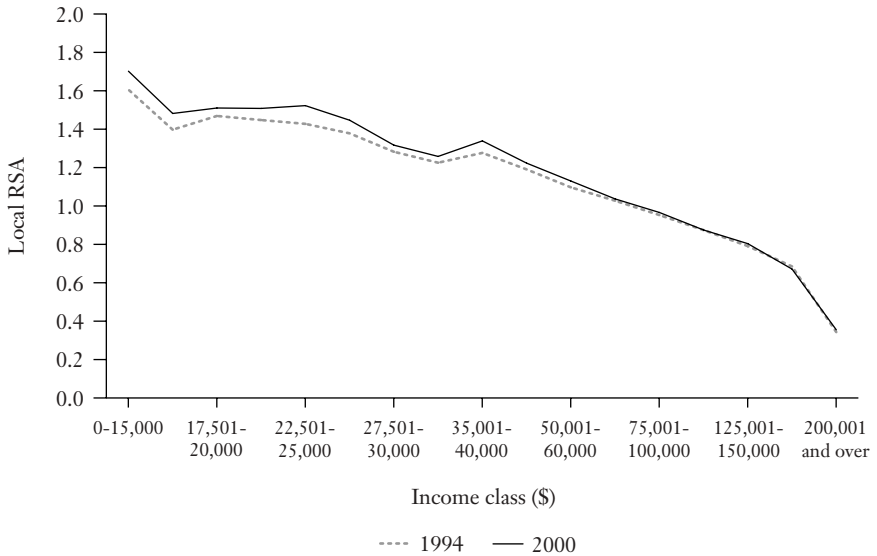
Two general factors contribute to this modest increase. First, while net fiscal benefits fell across family income groups, they fell less for lower-income families. Second, (post-government) income increased for all families, particularly money income and non-money income additions for higher-income families. As a result, the neutral benchmark (which is proportional to post-government income in each year) increased relatively more for lower-income families than for higher-income families from 1994 to 2000. This reflects the fact that as the economy expanded, money income increased and so PIT as a share of government revenues increased (see table 2). If PIT is the most powerful redistributive tax vehicle, with a progressive pattern, then a stronger economy may contribute indirectly to more redistribution toward lower-income families. In other words, the increase in redistribution may reflect the progressivity of the fiscal system and a shift in the underlying income distribution.<sup>29</sup>

Figure 5 shows that there was more redistribution in 2000, particularly in favour of families in the two lowest income groups, as well as families with incomes from \$20,001 to \$30,000 (in 1997 dollars). Redistribution also increased in favour of other families, but to a lesser extent for the highest income groups.

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29 Technically, the shift in the underlying income distribution refers to a change in the weights of the ordered (post-government) income shares, as depicted in equation 3 above. The weights for the lower income groups fell, while the weights increased for higher income groups, whose money income increased significantly from 1994 to 2000 (see table 2).

**FIGURE 5 Redistribution by Local Government, by Income Class, Local RSA Index, 1994 and 2000\***



To conclude, differences in the impact of redistribution for particular income groups appear to reflect government policies targeting certain groups. There was more redistribution through the transfer system than through government purchases. Provincial governments targeted the two lowest income groups and the federal government targeted families in a broader income range. While it is more difficult to compare detailed results with previous studies, this study finds evidence of a slight upward trend in redistribution in favour of lower income groups between 1994 and 2000. This raises the question of how specific programs influenced the redistribution of family incomes.

### Redistribution Through Specific Programs

When the redistributive effects of specific revenue and spending programs are examined separately, the source of progressivity in the fiscal system is found to be concentrated in PIT, health spending, CIT, elderly and C/QPP benefits, and provincial social assistance. There were only minor changes during the fiscal consolidation period, except in the case of CIT.

Tables 4 and 5 compare global and local redistribution indices for some major specific programs in 1997. The revenue categories shown in table 4 and the expenditure categories shown in table 5 are presented in descending order by global RSA value. Again, any interpretation of intertemporal results must take into account the interaction of the progressivity (regressivity) of the fiscal system and any shift in the underlying income distribution.

**TABLE 4 Redistribution for Specific Revenue Categories by Income Class, Global and Local RSA Indexes, 1997**

	PIT (1)	CIT (2)	Property taxes (3)	Other payroll taxes (4)	C/QPP cont. (5)	EI cont. (6)	Other indirect taxes (7)
Global RSA index . . . . .	1.046	1.025	1.005	1.002	1.001	1.000	0.986
Local RSA index							
0-\$15,000 . . . . .	1.167	1.025	0.973	1.011	1.015	1.015	0.858
\$15,001-17,500 . . . . .	1.149	1.029	0.999	1.008	1.010	1.008	0.960
\$17,501-20,000 . . . . .	1.140	1.037	1.000	1.009	1.008	1.009	0.963
\$20,001-22,500 . . . . .	1.133	1.036	0.998	1.010	1.009	1.011	0.969
\$22,501-25,000 . . . . .	1.126	1.036	1.004	1.010	1.008	1.011	0.979
\$25,001-27,500 . . . . .	1.106	1.035	0.997	1.007	1.006	1.007	0.979
\$27,501-30,000 . . . . .	1.087	1.032	1.001	1.006	1.004	1.005	0.985
\$30,001-35,000 . . . . .	1.072	1.030	1.005	1.004	1.002	1.001	0.977
\$35,001-40,000 . . . . .	1.080	1.032	1.007	1.006	1.005	1.005	0.989
\$40,001-45,000 . . . . .	1.054	1.030	1.006	1.003	1.002	1.001	0.989
\$45,001-50,000 . . . . .	1.035	1.028	1.008	1.000	0.998	0.997	0.989
\$50,001-60,000 . . . . .	1.015	1.023	1.009	0.998	0.995	0.993	0.995
\$60,001-100,000 . . . . .	0.987	1.020	1.012	0.996	0.994	0.993	1.003
\$100,001-125,000 . . . . .	0.955	1.012	1.009	0.994	0.995	0.994	1.007
\$125,001-150,000 . . . . .	0.928	0.979	0.998	0.997	0.998	1.001	1.017
\$150,001-200,000 . . . . .	0.879	0.939	0.982	0.999	1.002	1.008	1.026
\$200,001 and over . . . . .	0.774	0.765	0.925	1.001	1.015	1.022	1.080

### **Taxation**

PIT was the most redistributive (in favour of lower-income families) among the revenue categories (and, in fact, among all fiscal categories) with a global RSA index of 1.046 in 1997. About 4 percent of (post-government) income would have been redistributed toward higher income groups under a neutral PIT system. These results support the emphasis in Ruggeri et al. on the redistributive impact of PIT.

As seen in table 4, the local RSA index for PIT fell relatively steadily from 1.167 for families in the lowest income group to 0.774 in the highest income group, with a breakeven point of roughly \$65,000 in 1997. This shows that families at the lower end of the income spectrum would have lost about 15 percent and families at the top end would have regained nearly 20 percent under a neutral tax system.

This pattern remained relatively stable from 1994 to 2000. There was a slight upward shift in federal PIT (61 percent of total PIT), while there was a slight downward shift in the provincial tax system as significant reforms were implemented beginning in fiscal 1996-97.

CIT, which is allocated to families with dividends and realized capital gains, was half as redistributive, with a global RSA index of 1.025 in 1997. About 2 percent of (post-government) income would have been redistributed toward higher income groups under a neutral CIT system.

The redistribution toward a broader range of middle income groups through the tax system seen in figure 4a was due to CIT collections in 1997. The local RSA index flatlined from the lowest income group to roughly \$125,000 and then dropped below 1.000 for the three highest income groups. With a local RSA index of 0.765, families in the highest income group would have regained about 20 percent under a neutral CIT system.

The global RSA index for CIT increased from 1.016 in 1994 to 1.025 in 2000, owing (at least in part) to post-government income rising more than CIT collections. This increase reflects the majority of the increase in redistribution (in favour of lower-income families) for the entire fiscal system during the fiscal consolidation period.

Property taxes, which were 90 percent local property taxes, were nearly proportionally distributed across family income groups. The global RSA index was 1.005 in 1997.

There was an inverted U-shaped pattern of progressivity, with local RSA indices slightly below 1.000 for families with income of \$17,500 or less and those above \$150,000. This reflects the mix between various types of property taxes—for example, between the slight progressivity of business building taxes to the slight regressivity of residential building taxes. These two types of taxes accounted for 58 percent of all local property taxes in 1997. The pattern remained consistent during the fiscal consolidation period.

Several other categories in table 4 show redistribution in proportion to income in 1997. In these cases, less than 1 percent of (post-government) income would have been redistributed under a neutral benchmark system.

### ***Expenditures***

Health-care spending, of which 97 percent was provincial spending, was the most redistributive (in favour of lower-income families) of all spending categories. Table 5 shows that with a global RSA index of 1.023 in 1997, it had about half the redistributive impact of PIT.

The local RSA index was highest for those with income between \$22,501 and \$25,000 (1.085) and between \$35,001 and \$40,000 (1.072). The changes in the lowest income group and at the higher end of the income spectrum were the same in size (about 5 percent) in 1997. There was a noticeable increase in provincial health-care spending, particularly in 2000 when it jumped by 11 percent (\$7.2 billion). As a result, the global RSA index for health-care spending rose to 1.025 in 2000.

Elderly benefits (old age security, guaranteed income supplement, and the spouse's allowance programs) were also redistributive with a global RSA index of 1.017 in 1997.

**TABLE 5** Redistribution for Specific Expenditure Programs by Income Class, Global and Local RSA Indexes, 1997

	Health purchases (1)	Elderly benefits (2)	C/QPP benefits (3)	Housing, transport, protection (4)	Prov. social assistance (5)	EI income (6)	Postsec. ed. purchases (7)	Canada child tax benefit (8)	El./sec. ed. purchases (9)
Global RSA index	1.023	1.017	1.014	1.013	1.011	1.004	1.002	1.001	0.994
Local RSA index									
0-\$15,000	1.062	0.979	1.013	1.127	1.234	1.013	1.035	0.994	0.962
\$15,001-17,500	1.025	0.997	1.030	1.060	1.103	1.028	1.051	0.996	0.957
\$17,501-20,000	1.050	1.112	1.054	1.044	1.043	1.016	1.016	0.995	0.957
\$20,001-22,500	1.067	1.116	1.067	1.040	1.035	1.010	1.010	0.996	0.959
\$22,501-25,000	1.085	1.111	1.063	1.034	1.031	1.005	1.004	0.996	0.963
\$25,001-27,500	1.069	1.063	1.055	1.035	1.028	1.007	1.001	0.999	0.971
\$27,501-30,000	1.054	1.036	1.049	1.026	1.025	1.007	1.004	0.998	0.968
\$30,001-35,000	1.060	1.042	1.034	1.020	1.013	1.006	0.999	1.000	0.972
\$35,001-40,000	1.072	1.046	1.037	1.018	1.009	1.005	0.998	1.002	0.977
\$40,001-45,000	1.038	1.028	1.027	1.010	1.002	1.005	0.999	1.003	0.986
\$45,001-50,000	1.013	0.999	1.004	1.006	0.996	1.006	0.997	1.006	1.004
\$50,001-60,000	0.991	0.984	0.990	1.000	0.990	1.004	0.998	1.004	1.017
\$60,001-100,000	0.977	0.977	0.981	0.992	0.987	0.997	1.000	1.001	1.028
\$100,001-125,000	0.967	0.974	0.976	0.987	0.985	0.991	1.002	0.997	1.020
\$125,001-150,000	0.962	0.974	0.976	0.980	0.985	0.990	1.004	0.995	1.003
\$150,001-200,000	0.951	0.972	0.976	0.973	0.985	0.988	0.998	0.993	0.989
\$200,001 and over	0.932	0.971	0.972	0.948	0.985	0.986	0.986	0.993	0.965

The pattern of local progressivity had a clear inverted U-shape in 1997. Families with income below \$45,000 received more than their proportional income share—one of the lowest breakeven points in tables 4 and 5. More specifically, families with income from \$20,001 to \$22,500 would have lost the most under a neutral system, with a local RSA index of 1.116. Families in the lowest and highest income groups received roughly their proportional share of (post-government) income. This pattern did not change from 1994 to 2000.

C/QPP benefits were redistributive with a global RSA index of 1.014 in 1997. This is in contrast to C/QPP contributions, which are collected roughly in proportion to income across all groups.

The level and pattern of progressivity for C/QPP benefits was similar to that for elderly programs, but the U-shaped pattern was wider. The local RSA index increased to 1.067 for families with incomes from \$20,001 to \$22,500. Thereafter, it fell to 0.972 for the highest income group, with a breakeven income level of \$45,000. The level of redistribution in this sector did not change during the fiscal consolidation period when contributions increased to roughly equal the level of income paid to seniors.

If transfers to the elderly and C/QPP benefits are combined, the global RSA index is 1.030 in 1997. The local RSA index falls from 1.178 for families with incomes from \$20,001 to \$22,500 to 0.944 in the highest income group, with a breakeven income level of \$50,000. This pattern holds from 1994 to 2000.

Housing, transportation, and protection spending was also redistributive with a global RSA index of 1.013 in 1997. This is influenced by both the combined size of the program (over \$40 billion in 1997) and the allocation rules: housing spending was allocated progressively to lower income groups, transportation spending was allocated proportionally, and protection spending was allocated equally per capita. Interestingly, using an equal per capita rule introduced some progressivity in favour of lower income groups.

The local RSA index for this spending ranged from 1.127 to 0.948 in 1997, with a breakeven income level of \$50,000. Families in the lowest income group would have lost 10 percent of their income under a neutral benchmark level of spending.

Finally, provincial social assistance, which includes income maintenance as well as other social assistance programs, was redistributive with a global RSA index of 1.011 in 1997. All of the progressivity was exhibited in the lowest income group with a local RSA index of 1.234 in 1997. The index fell steeply with the next income group, and then the distribution was roughly proportional to income for the remaining income groups. Neither this level nor this pattern changed despite lower expenditures in this program during the consolidation period.

Several other program categories in table 5 resulted in global distribution very nearly in proportion to income in 1997. These include EI benefits, postsecondary education, the CCTB, and elementary and secondary educational spending. With these programs, less than 1 percent of (post-government) income would have been redistributed under a neutral benchmark system.

## CONCLUSIONS

This study attempts to analyze the redistributive nature of the fiscal system in Canada in the 1990s. The main finding of the study is that the redistributive nature of the fiscal system was maintained, and in fact, the level of redistribution increased slightly in favour of lower-income families during the fiscal consolidation period.

Governments consolidated their finances predominantly through discretionary policies (either lower expenditures or higher revenues) between 1994 and 2000. The goal of this article was to build a full fiscal incidence framework to gauge the extent of redistribution during this period. Given the similarity of this framework to the one used by Ruggeri et al. for 1986, it is also possible to compare the fiscal redistribution across the two decades.

The key concept behind the current and previous studies is the distributionally neutral benchmark. This benchmark is used to gauge the amount of redistribution in the existing fiscal system compared with a system that results in proportional distribution of post-government income. The gap between the benchmark and the existing fiscal system is measured using a global RSA measure (across all families) and a local RSA measure (by family income group). Either global or local measures can be applied to individual components of the system.

The empirical results suggest that for 1997, about 15 percent of (post-government) income would have been redistributed toward higher income groups if a distributionally neutral fiscal system had been adopted. The magnitude of redistribution is up slightly from the 1980s as well as from 1994, around the start of the fiscal consolidation period.

The largest source of this redistribution is taxation and is attributable to the federal government. Specific programs include PIT, health-care expenditures, and, to a lesser extent, transfers to seniors. These remained the drivers of fiscal redistribution throughout the fiscal consolidation period.

**APPENDIX ALLOCATION RULES USING SPSPD/M**

Source of income	Allocation rule
A. <i>Money income</i>	
Wages and salaries	Employment income
Unincorporated business income	Self-employed income
Realized capital gains to persons	Realized capital gains
Dividend income to persons	Dividend income
Interest income to persons	Interest income
Other investment income to persons	Other investment income
Other (including pension) income	Other income
B. <i>Direct transfers to persons</i>	
UI/EI and OAS/GIS/SA benefits, CCTB credit, GST credit, and C/QPP income	Relevant SPSPD/M variable
War pensions and veteran allowances	Pension income
Provincial social assistance	Provincial social assistance
Workers' compensation	Employment income
Other transfers	Equal per capita
C. <i>Non-money income additions</i>	
Imputed rent	Gross imputed rent expenditures (net of taxes)
Imputed interest income	Interest income
Net accrued capital gains	Relevant SPSPD/M variable
D. <i>Adjustments to income</i>	
UI/EI contributions and C/QPP contributions	Relevant SPSPD/M variable
Workers' compensation and other payroll taxes	Employment income
Corporate taxes	Dividend plus realized capital gains
Property taxes	Business/structure: dividend plus realized capital gains
	Farm structure: self-employed farm income
	Resident owner/structure: property tax
	Resident rent/structure: other investment income
	Business/non-structure: total expenditures (net of taxes)
	Farm non-structure: food and non-alcoholic beverages
	Resident owner/non-structure: property tax
	Resident renter/non-structure: gross rent paid
Transfers from corporations to persons	Equal per capita
Transfers from governments to corporations	Dividend plus realized capital gains

(The appendix is concluded on the next page.)



**APPENDIX Concluded**

Source of income	Allocation rule
E. <i>Government purchases</i>	
Health	Age-sex utilization
Education	Age utilization
Housing	Two lowest quintiles: 50% to owners and 50% to renters
Transportation	Net expenditure on transportation and communications
Protection and other purchases	Equal per capita
F. <i>Taxes, contributions to social insurance plans, and royalties</i>	
Personal income taxes	Relevant SPSD/M variable
Corporate income taxes	Dividend plus realized capital gains
UI/EI contributions	UI/EI contributions
GST	Total expenditure net of taxes
Workers' compensation and employer health taxes	Employment income
Other indirect taxes	Total expenditure net of taxes
Royalties	Total expenditure net of taxes
Transfers from persons	Equal per capita
C/QPP contributions	C/QPP contributions