Tax burden, benefits unevenly distributed across Canada says C.D. Howe Institute study

The federal government collects taxes from low-income Canadians in high-income provinces in part to fund transfers to higher-income residents of poorer provinces, concludes a *C.D. Howe Institute Commentary* released today. The study also suggests that, on balance, average-income families in the higher-income provinces are significant financial contributors to the federal government, while those in lower-income provinces pay little or no tax net of transfer benefits.

The study, *Where the Money Goes: The Distribution of Taxes and Benefits in Canada*, was written by Finn Poschmann, a Policy Analyst at the C.D. Howe Institute.

Poschmann points out that, as one would expect, the taxes Canadians pay to Ottawa depend on the income of the taxpayer. For example, as a share of income, the federal tax take ranges from a low of about one-quarter of family income in Newfoundland to a high of 30 percent of income in British Columbia. The higher share taken in taxes in the "have" provinces mostly reflects the graduated personal income tax system: people with higher incomes pay a higher share of income in taxes.

As for benefits, Poschmann notes that the direct transfers Canadians receive, such as old age security or employment insurance payouts, are just part of the picture of the net federal fiscal relationship with families. A much fuller picture emerges when the impact of intergovernmental transfers is included. Indeed, when such major transfers as the Canada Health and Social Transfer (CHST) and provincial fiscal equalization are included, the river of interprovincial redistribution of income begins to flood.

Poschmann says the true distribution of benefits of the provincial spending implicitly funded by federal transfers is unknown. But if CHST money is attributed to the funding of health care, postsecondary education, and welfare services, for example, the distribution of benefits by family income level is reasonably well geared to income. If the CHST is *not* assumed to pay for those services that favor low-income Canadians, the net impact appears rather less beneficial to this group. And if the effect of the equalization program is to lower provincial tax rates across the board, the distribution of benefits to low-income families is less congenial yet. Using reasonable distributional assumptions, Poschmann illustrates the likelihood that the federal government collects taxes from low-income Canadians in high-income provinces in part to fund transfers to higher-income residents of poorer provinces. Allowing for taxes to be

offset by direct cash transfers as well as the benefits of transfers to provincial governments, the average Canadian family is a net contributor to the federal purse of about $3,500, Poschmann says. But there is a wide range among provinces, with the average family *receiving* $1,700 in New Brunswick, for example, but *paying out* $2,700 in Saskatchewan. Likewise, the average gain in Newfoundland is almost $7,000, but Albertan families pay out more than $6,000.

Poschmann's paper sheds light on the otherwise obscure impact of federal transfers to the provinces. An understanding of the redistributive role of these transfers will, he says, help in making better decisions about the future of intergovernmental transfer programs.

This study is the first in a new series of Commentaries called "The Transfer Papers," prompted by the expectation that new legislation on provincial fiscal equalization will be tabled in fiscal year 1998/99 following federal-provincial review of the program. The series aims to encourage debate about new ways to finance the Canadian federation and how to accomplish the twin goals of an efficient and prosperous economy and fairness for all Canadians. Papers in the series will examine the economic impact of Ottawa's budgetary presence in the provinces on provincial economies; design and implementation principles for Canada's system of interprovincial transfers; proposals to align current programs with those principles; and a roadmap to reform.

The series is being published under the general editorship of Professor Paul Boothe of the University of Alberta and an Adjunct Scholar of the C.D. Howe Institute.

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The C.D. Howe Institute is Canada's leading independent, nonpartisan, nonprofit economic policy research institution. Its individual and corporate members are drawn from business, labor, agriculture, universities, and the professions.

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Where the Money Goes: The Distribution of Taxes and Benefits in Canada, C.D. Howe Institute Commentary 105, by Finn Poschmann (C.D. Howe Institute, Toronto, April 1998). 28 pp.; $9.00 (prepaid, plus postage & handling and GST — please contact the Institute for details). ISBN 0-88806-423-3.

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Communiqué

La répartition du fardeau fiscal et des avantages canadiens est inégale, indique une étude de l'Institut C.D. Howe

Le gouvernement fédéral perçoit des impôts auprès des Canadiens à faible revenu dans les provinces nanties, en partie pour financer les transferts aux résidents à revenus élevés des provinces moins nanties. Telle est la conclusion d'un *Commentaire de l'Institut C.D. Howe* publié aujourd'hui. L'étude suggère également qu'en moyenne, les familles à revenus moyens dans les provinces nanties sont d'importants bailleurs de fonds pour le gouvernement fédéral, tandis que celles des provinces moins nanties paient peu ou pas d'impôts, déduction faite des avantages des transferts.

L'étude, intitulée *Where the Money Goes: The Distribution of Taxes and Benefits in Canada (Où va l'argent : la répartition des impôts et des avantages au Canada),* est rédigée par Finn Poschmann, un analyste de politique à l'Institut C.D. Howe.

M. Poschmann indique que conformément aux attentes, les impôts que les Canadiens remettent à Ottawa dépendent du revenu du contribuable. Ainsi, l'impôt fédéral, exprimé en tant que pourcentage du revenu, varie d'un minimum d'un quart du revenu familial à Terre-Neuve à un maximum de 30 % du revenu en Colombie-Britannique. La part plus élevée des impôts dans les provinces nanties témoigne principalement du taux d'imposition progressif : les individus qui reçoivent un revenu plus élevé sont assujettis à une part plus élevée d'impôt sur le revenu.

Pour ce qui est des avantages, M. Poschmann souligne que les transferts directs que reçoivent les Canadiens, sous forme de prestations de sécurité de la vieillesse et d'assurance-emploi ne représentent qu'un aspect de la relation fiscale nette qu'entretient le gouvernement avec les familles. Un tableau plus complet apparaît lorsqu'on tient compte des répercussions des transferts intergouvernementaux. En fait, lorsqu'on tient compte des importants transferts comme le Transfert canadien en matière de santé et de programmes sociaux et la péréquation fiscale des provinces, le flot de redistribution du revenu entre les provinces déborde.

L'auteur indique que la répartition véritable des avantages des dépenses provinciales financées implicitement par les transferts fédéraux n'est pas connue. Si les sommes du Transfert canadien en matière de santé et de programmes sociaux sont imparties par exemple au financement des services de santé, de l'éducation postsecondaire et des services d'aide sociale, la répartition des avantages est raisonnablement bien adaptée au niveau du revenu familial.

Mais si l'on estime que le Transfert ne sert *pas* à payer les services qui favorisent les Canadiens à faible revenu, la portée nette semble bien moins avantageuse pour ce groupe. Et si l'effet du programme de péréquation est de baisser les taux d'impôt provincial d'une manière générale, la répartition des avantages envers les familles à faible revenu est encore moins généreuse envers ce groupe. À l'aide d'hypothèses distributives raisonnables, M. Poschmann illustre la probabilité que le gouvernement perçoive des impôts auprès des Canadiens à faible revenu dans les provinces nanties, pour financer en partie les transferts aux résidents à revenu élevé des provinces moins nanties. Compte tenu des impôts compensés par les transferts pécuniaires directs et des avantages des transferts aux gouvernements provinciaux, la famille canadienne moyenne est un bailleur de fonds se montant à environ 3 500 $ pour la bourse fédérale, indique M. Poschmann. Mais le montant varie selon la province, par exemple, la famille moyenne *reçoit* 1 700 $ au Nouveau-Brunswick, mais *verse* 2 700 $ en Saskatchewan. De même, le gain moyen à Terre-Neuve est de presque 7 000 $, tandis que les familles albertaines versent plus de 6 000 $.

Le document de M. Poschmann éclaire les répercussions généralement obscures des transferts fédéraux aux provinces. Selon lui, une compréhension du rôle de redistribution de ces transferts aidera à prendre de meilleures décisions en matière des programmes de transferts gouvernementaux dans l'avenir.

Cette étude est la première d'une nouvelle série de Commentaires intitulée « Les cahiers du transfert », et elle repose sur la prévision selon laquelle on présentera un nouveau projet de loi lors de l'exercice 1998-1999 sur la péréquation fiscale des provinces à l'issue d'un examen fédéral-provincial du programme. La série vise à stimuler le débat sur de nouvelles façons de financer la fédération canadienne et sur la réalisation de l'objectif double d'une économie efficiente et prospère et de l'équité pour tous les Canadiens. Les documents de cette série se pencheront sur les répercussions économiques de la présence budgétaire d'Ottawa dans les provinces sur les économies provinciales, la conception et les principes de mise en œuvre du système canadien des transferts interprovinciaux, les propositions visant à aligner les programmes actuels sur ces principes, et une carte routière de la réforme.

La série est publiée sous la direction générale du professeur Paul Boothe de l'Université de l'Alberta, un attaché de recherche auprès de l'Institut C.D. Howe.

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Where the Money Goes:

The Distribution of Taxes and Benefits in Canada

by

Finn Poschmann

The average Canadian family's net federal tax bill differs from province to province.

The taxes Canadians pay to the federal government depend on the income of the taxpayer, and the numerous benefits Ottawa pays to Canadians also typically depend on income. When divided up along provincial lines, representative families in the higher-income provinces appear to be significant financial contributors to the federal government, on balance, while those in lower-income provinces pay very little tax net of direct transfer benefits.

But this is just part of the picture of the net federal fiscal relationship with families: including the impact of intergovernmental transfers provides a fuller picture. When major intergovernmental transfers, such as the Canada Health and Social Transfer (CHST) and provincial fiscal equalization are included, the river of interprovincial redistribution of income begins to flood.

The true distribution of benefits of the provincial spending implicitly funded by federal transfers is unknown. But if we attribute CHST money to the funding of health care, postsecondary education, and welfare services, for example, the distribution of benefits by family income level is reasonably well geared to income. If one does not assume that the CHST pays for those services that favor low-income Canadians, the net result appears rather less beneficial. And if the effect of the equalization program is to lower provincial tax rates across the board, the distribution of benefits is less congenial yet. Given reasonable distributional assumptions, it seems likely that the federal government collects taxes from low-income Canadians in high-income provinces in part to fund transfers to higher-income residents of poorer provinces.

The existence of intergovernmental transfers adds a layer of complexity to the analysis of taxes paid and benefits received by Canadian families. This complexity makes it difficult for Canadians to assess properly the importance of the taxes they pay to each level of government in funding services provided by one level of government or another. This lack of transparency in the fiscal relationship between Canadians and their governments is a source of persistent confusion in the attempt to assess the fairness of tax and transfer policy.

Main Findings of the Commentary

- The amount of federal tax levied on individuals varies by province, mostly because of provincial differences in average income. The average family in the Atlantic provinces pays a federal tax bill amounting to less than 75 percent of the typical bill in Alberta or Ontario.

- As a share of income, the federal tax take ranges from a low of about one-quarter of family income in Newfoundland to a high of 30 percent of income in British Columbia. The higher share taken in taxes in the "have" provinces mostly reflects the graduated personal income tax system. People with higher incomes pay a higher share of income in taxes.

- The relative importance of federal transfers to individuals — such as employment insurance and old age security — also varies by province. The federal contribution to family income in Newfoundland, for example, is twice that of the Canadian average. Federal direct transfers to families average about $6,000 in Prince Edward Island and about $3,000 in Alberta.

- Ottawa also sends money to provincial governments, and the amounts of these transfers are sensitive to the income level within a province. The largest program, the Canada Health and Social Transfer (CHST), has a much bigger per capita value in the "have-not" provinces than in the "haves." Combined with the provincial fiscal equalization program, the cash payment to Nova Scotia, for example, is five times the per capita payment to Alberta or Ontario.

- The benefits to Canadians of federal transfers to provinces are less well understood than the benefits of transfers to individuals. If one attributes CHST funding to the purchase of health care, postsecondary education, and welfare services, the benefits of the transfer appear to be preferentially delivered to relatively low-income households. This follows from the demographic profile of Canadians most likely to take advantage of these particular services.

- But what about equalization? If the provincial fiscal equalization program allows provinces to have tax rates lower than otherwise, the beneficiaries are unlikely to be low-income families. This is because provincial taxes are themselves quite clearly geared to income, so the provincial tax saving made possible by the federal transfer is more valuable to a high-income family than to one less well off. This analysis allows the conclusion that the federal government collects taxes from low-income Canadians in high-income provinces in part to fund transfers to higher-income residents of poorer provinces.

- Summing taxes paid and transfers received by family by province provides a partial picture of the net federal fiscal impact on families. Including the impact of intergovernmental transfers gives us a fuller picture.

- Allowing for taxes to be offset by direct cash transfers as well as the benefits of transfers to provincial governments, the average Canadian family is a net contributor to the federal purse of about $3,500. But there is a wide range among provinces, with the average family *receiving* $1,700 in New Brunswick, for example, but *paying out* $2,700 in Saskatchewan. Likewise, the average gain in Newfoundland is almost $7,000, but Albertan families pay out more than $6,000.

- The effect of federal transfers to provinces is to obscure the incidence of federal taxes and transfers. A better understanding of the redistributive role of these transfers will help in making decisions about the future of intergovernmental transfer programs.

Canadians are haunted by the question of how the cost of financing governments' responsibilities ought to be distributed.

The federal and provincial governments share the power to tax and the power to spend. But the evolved division of responsibilities is such that no particular government's tax intake matches its direct spending requirements. Perhaps for this reason the financial relationship between levels of government remains unsettled, and the link between taxing and spending is less than clear to the public. The electorate is uncertain about whether an individual's tax liability is reasonable and commensurate with the spending requirements of his or her governments.

Given these concerns, it is surprising how few studies of the burden of federal taxation focus on provincial differences in that burden. And those that do look at provincial differences pay little attention to the distributional impact — how the federal tax take varies with taxpayer income and how federal taxes differ for residents of different provinces.

Public knowledge about federal taxation has other gaps, too. For example, most analysts acknowledge that transfers to individuals — the money government sends out in the form of benefits for children, seniors, and the unemployed — ought to be considered together with personal taxes. Yet the implied net balance — taxes less transfers — is often not evaluated across income levels and across provinces simultaneously.

Neither is the distributional impact of financial arrangements between levels of government much examined. Studies exist of the full fiscal impact of government on house-holds, but not of the impact on those households of federal activities alone nor of the distributional effects of intergovernmental transfers.

The aim of this *Commentary* is to step into that gap and summarize an important part of the fiscal relationship between Canadians and the federal government. The relationship is not new ground for students of fiscal federalism, but this paper brings to the question data and tools that allow the reader to evaluate the relationship in new ways. Most important is the opportunity to contrast among provinces the net effect of federal taxes and transfers and to estimate the distributional impact of intergovernmental transfers. A better understanding of these matters may be helpful in maintaining public trust.

The Plan of the *Commentary*

In the first part of this *Commentary*, I introduce direct measures of federal revenue by province, derived from the taxation of individuals, plus distributional estimates, arrived at via static microsimulation, which give a good idea of how federal taxes bear on families of different income levels.

The discussion then turns to federal transfers to individuals, followed by an estimate of the distributional impact of total direct transfers. Shown separately is the particularly interesting incidence of net employment insurance (EI) premiums and benefits.

The second part of the paper brings in major federal transfers to provincial governments. Although these transfers' overall role in provincial finance is waning, their impact remains large, and it differs across provinces. These transfers are important here because their size has a powerful influence on the amount of revenue Ottawa feels compelled to raise and because of their consequent effect on provincial taxation and expenditure.

Thus, I begin part three of this paper by developing a set of assumptions that allows me to attribute to families the cost and benefit of federal intergovernmental transfer spending. The goal is a look at tax and transfer incidence based on an historical view of why Canadian governments' finances are arranged the way they are.

After presenting my distributional model of intergovernmental transfers, I link the results with those of the first part of the paper, netting the national impact of raising funds for federal transfers to provinces against the distributional impact of the receipt of those transfers in the provinces. The calculations ultimately produce a measure of the net fiscal impact of the federal government on Canadians. This measure allows comparisons across provinces and income levels.

The Findings

The analysis of the impact of federal taxes and transfer payments yields interesting answers to the question of how the burdens and benefits are distributed across provinces.

A common assumption is that because federal tax laws are the same everywhere in the country and the rules governing transfers to individuals and governments are likewise similar across provinces, the net fiscal impact on Canadians is consistent across the country. It is not.

A little reflection reveals this unconventional wisdom to be obvious: a graduated income tax system dictates, by way of arithmetic, that in provinces whose residents have average personal incomes higher than the national average, the representative taxpayer will pay in tax a higher-than-average share of income.

The matter of federal transfers to the provinces raises a confounding question. Ottawa collects taxes and provides transfers to individuals based on their individual income status; it also sends money to provinces according to the general income level within each. The intergovernmental transfer disconnects the perceived burden of taxation from the benefit delivered to taxpayers by way of the provincial spending funded by the transfer.

When the average income differences between provinces are large, tax and transfer policies that appear progressive in the national

aggregate may be regressive from the point of view of individuals resident in different provinces. This result is not so easily observable when one examines federal taxes in isolation; cross-province regressivity is more easily detectable when one considers taxes in the context of the transfers to individuals and governments that are funded by those taxes. This paper suggests that this unpleasant interprovincial imbalance represents the current state of affairs in Canada.

In a nutshell, poor people in richer provinces commonly subsidize the living standard of people who are better off but happen to live in poorer provinces.

The cautionary note for federal policy is that, where progressivity is concerned, more is not always better. Specifically, generous cross-province transfer mechanisms have a noxious effect on horizontal equity. Taxpayers who have similar family types and similar incomes face divergent net federal tax burdens depending on the province they live in.

Much of this undesirable impact follows from federal interaction with provincial governments. Where the federal government is dealing directly with individuals, the results are more predictable, not least because taxpayers can directly observe the transfers involved (especially if they themselves are affected). On the other hand, because of provincial intermediation of intergovernmental transfers, taxpayers in beneficiary provinces may inappropriately credit to their provincial taxation the delivery of a healthy bundle of services.

The Federal Take

My analysis starts with an examination of what Ottawa takes in taxes from individuals and a discussion of what it transfers to them. This provides part of the measure of federal fiscal incidence (as far as the range of taxes and transfers included can provide such a measure; for theoretical and practical reasons, I ex-

clude some particular taxes, transfers, and expenditures, which I explain as I go along).

Federal Taxation

What measures give a good picture of the federal government tax appropriation?

Consider federal income tax on personal and unincorporated business income in combination with other direct taxes, including unemployment or employment insurance (UI/EI) premiums. Ottawa derives about 60 percent of its own income via these direct taxes.[1]

Indirect taxes, primarily consumption taxes, contribute another 20 percent (a more or less steady decline from the one-third share of federal revenue consumption taxes provided three decades ago.) The remainder of the federal government's revenue comes, more or less equally, from direct taxes on corporations and from its own investments.

The distribution of federal tax revenue across provinces naturally follows the distribution of aggregate income across provinces. Table 1 sets out the per capita tax amounts, whose ranking generally follows that of the provinces in average income.

The interprovincial differences in tax paid per capita reflect both the fairly progressive nature of federal taxation and the average income disparity across provinces. Not surprisingly, the residents of provinces with higher-than-average income pay higher-than-average taxes per person. This is the arithmetically inescapable outcome of progressivity in the federal tax structure.

Indeed, in provinces where average income is above the national average, the provincial share of total federal tax collected tends to exceed the provincial share of national income. In provinces where average income is below the national average, the provincial share of total federal tax paid tends to be less than the provincial share of national income.[2] In 1995, the province whose residents paid the lowest share of income in federal tax stood at 82 percent of the national average; the highest effective tax rate was 109 percent of the average.

Distributional Results

To look at the distributional impact of the federal tax burden across income levels and provinces, the tool I used was Statistics Canada's Social Policy Simulation Database and Model (SPSD/M).[3] (See the Appendix for information about this model and the limits imposed by the microsimulation approach, as well as the incidence assumptions that pertain to all of the microsimulation results described here.)

The proportion of income given up in federal taxes increases quite steadily with income in all provinces. Table 2 reports estimates of the tax burden 1997 as a percentage of total census family income after taxes and transfers. The dollar amounts shown in the last column and the last row also represent families taken as a unit, so they are a reasonably consistent multiple of the per capita amounts shown in Table 1. (See Box 1 for an explanation of census families.)

For the lowest income category, the average tax rate hovers around 10 percent of post-tax, post-transfer income, which seems a little high at first glance. It is, however, a plausible result since the tax universe evaluated here includes EI premiums and federal consumption taxes. With increasing incomes, the influence of the personal income tax (PIT) takes over, its graduated structure producing federal taxes in the neighborhood of 40 percent of post-tax income in the highest bracket.

When one considers the range across provinces, the influence of provincial average income differences mentioned above becomes apparent. For example, the average effective tax rate of 30 percent in British Columbia is fully one-quarter higher than the 24 percent average in Newfoundland. Effective tax rates in the intervening provinces are sprinkled evenly between these extremes.

Table 1: *Federal Direct and Indirect Taxes on Persons, 1961–95*

	1961	1966	1971	1976	1981	1986	1991	1992	1993	1994	1995
					(1995 dollars per capita)						
Newfoundland	409	482	781	1,225	1,408	1,643	2,463	2,480	2,428	2,462	2,598
Prince Edward Island	338	444	731	1,166	1,262	1,748	2,590	2,663	2,635	2,654	2,787
Nova Scotia	715	897	1,389	2,067	2,440	2,658	3,411	3,465	3,385	3,277	3,328
New Brunswick	610	785	1,182	1,688	2,513	2,415	3,032	3,296	3,402	3,341	3,533
Quebec	1,368	1,467	1,825	2,168	2,565	2,880	3,374	3,431	3,280	3,229	3,284
Ontario	1,815	2,224	2,759	3,225	3,450	4,165	4,553	4,582	4,371	4,373	4,421
Manitoba	961	1,088	1,603	2,110	2,276	2,573	3,043	3,133	3,057	3,111	3,256
Saskatchewan	564	742	1,007	2,014	3,153	2,305	2,901	2,862	2,797	2,874	3,063
Alberta	897	1,056	1,684	3,470	4,037	3,397	4,191	4,228	4,196	4,203	4,346
British Columbia	1,275	1,529	2,233	2,844	3,143	3,069	4,100	4,232	4,130	4,144	4,208
All Canada	1,338	1,585	2,083	2,676	3,061	3,335	3,930	3,988	3,851	3,844	3,922

Note: Direct taxes are federal income tax on personal and unincorporated business income plus UI/EI premiums from both employees and employers. Indirect taxes are primarily consumption taxes. All are indexed here via the national implicit price deflator for final domestic demand.

Source: Statistics Canada, *Provincial Economic Accounts, Annual Estimates 1961–1995*, cat. 13-213-XDB.

Table 2: *Federal Taxes as a Percentage of Family Income, 1997*

	Census Family Total Income, Post-Tax and Post-Transfer									Per Family Average
	≤ $20,000	$20,001–30,000	$30,001–40,000	$40,001–50,000	$50,001–60,000	$60,001–75,000	$75,001–100,000	≥ $100,000	All	
					(percent)					*(dollars)*
Newfoundland	8.9	15.4	21.8	25.5	30.6	32.5	34.9	38.5	24.4	6,425
Prince Edward Island	9.7	15.8	21.0	26.3	29.2	31.1	33.7	33.5	25.3	7,384
Nova Scotia	10.4	17.4	24.3	28.1	31.9	32.8	35.2	38.3	26.8	7,304
New Brunswick	10.0	16.6	23.8	28.7	31.2	32.6	36.3	37.9	27.0	7,603
Quebec	8.5	16.0	22.9	26.9	29.6	31.7	33.3	36.8	26.0	7,562
Ontario	9.8	14.9	23.1	27.1	31.1	32.6	34.9	39.1	29.5	10,540
Manitoba	10.5	17.0	22.9	26.9	29.3	31.3	35.6	39.4	28.1	8,988
Saskatchewan	11.6	18.2	23.4	28.1	30.4	31.6	34.1	40.7	28.3	8,331
Alberta	11.5	18.3	25.0	29.4	30.6	33.6	35.0	38.3	29.8	10,134
British Columbia	12.8	19.2	24.4	29.9	30.9	32.4	35.2	38.2	30.0	9,737
All Canada	10.0	16.4	23.4	27.7	30.6	32.4	34.7	38.5	28.5	9,255
				Average dollars per family						
Per family average	1,207	3,398	6,135	8,813	11,509	14,539	19,560	37,591	9,255	

Source: Simulation results derived via Statistics Canada, SPSD/M, release 6.0 (see Appendix).

Federal Transfers

Taxes are partially offset by a countercurrent, the flow of money from the federal government directly to individuals.

Federal transfers to persons on a national (or provincial) economic accounts basis notably include the old age security program and its siblings — the spouse's allowance and the guaranteed income supplement (GIS) — and EI benefits but exclude benefits from the Canada and Quebec Pension Plans (CPP/QPP). The included programs made up more than 60 percent of federal transfers to persons in 1995, when total federal transfers to persons accounted for the disposition of about one-third of all federal revenue.

Given their scale, it is natural that federal transfers should make a substantial contribution to personal incomes in the various provinces (see Table 3). The provincial pattern is inverse to that of Tables 1 and 2. Transfers represent a larger share of personal income for the residents of provinces with incomes lower than the national average, and the dollars per capita transferred are higher.

This distribution, which is progressive in the sense that the transfer contribution to income is more important in the low-income provinces, also mirrors Table 1 in the sense of implicitly illustrating progessivity. A given amount transferred is a larger relative share of income for a low-income individual than for a high-income one. Indeed, owing to program design, a low-income individual (of which low-income provinces have relatively more) will likely receive more absolute dollars from a given transfer program. Thus, a transfer with an average value exceeding $3,000 in Newfoundland may be just twice the average amount paid in Alberta, but expressed as a share of income, the average transfer is more than three times as large in Newfoundland as in Alberta.

Distributional Results

Moving to distributional impacts measured via microsimulation, rather than implicit in aggregate data, consider federal transfers to individuals as modeled for 1997 via the SPSD/M. Since the CPP/QPP is excluded from this exercise, the transfer programs considered in the simulated data differ little from the national accounts presentation in the first section of this paper.

(Readers should be aware that the national accounts definition of transfers also excludes child tax benefits because they are nominally credited against federal income tax revenue. These benefits are, however, included in the SPSD/M definition of federal transfers. Since in the former case they are excluded from both the numerator and the denominator and in the latter case the benefits are included in both, the impact on the aggregate results is small.)

In assessing the scale of transfers, consumable (post-tax, post-transfer) income is again the denominator. Table 4 shows results by province by census family income.

Across provinces, the effect of differing prevalence of low income is clear, highlighting the progressive structure of transfers to individuals I already noted. The striking feature of this distribution is the range of effective transfer rates: all the way from 9 percent to 27 percent of average provincial income. The range is broader yet across income brackets, even holding geography constant; for the all-province average, transfers make up less than 2 percent of income for the highest-income earners but almost 40 percent for those in the lowest bracket. In Newfoundland and Prince Edward Island, direct transfers comprise nearly half of income for families with less than $20,000 in total income.

Employment Insurance

The distributional profile of the EI program differs from that of other transfer programs (see Table 5). One reason is that, in order to derive income from EI, an individual must have had income. In addition, the program delivers substantial benefits to families that are not in the lower income classes. For example, in the Atlantic provinces, EI benefits make up more than 4 percent of income in the majority of families with total incomes above $50,000. The benefit rate for this group of families is typically double that paid to families at the same income level in the central and western provinces and generally above the overall national rate of 3.6 percent.

Almost everyone who has employment income must pay EI premiums. What is the net program impact, the remainder when EI employee and employer contributions are subtracted from benefits? The results are shown in Table 6. Because premiums exceed benefits paid, the overall net program impact is *negative*: an

average of –1.6 percent of family income after taxes and transfers.

Note, in particular, that the program is not progressive through the upper-income brackets. The reason is twofold. First, insurable income has an upper limit above which premiums are not collected. Second, uninsurable investment income and "other" income are relatively more important for high-income earners and employment income is less important.

On balance, Table 6 reveals that, when one considers percentages of income, the EI program transfers resources[4] from relatively low-income families in the central and western provinces to families of the same or higher income in the Atlantic provinces.

The Provincial Cut

Arithmetically speaking, it is simple to follow the procedure just used for calculating the EI net impact and subtract taxes (Table 2) from transfers (Table 4) to arrive at a partial federal fiscal incidence by province and by income. I proceed with that exercise in the third part of this paper, but first I need to develop estimates for the impact of those federal transfers that happen to be intermediated by the provinces.

As everyone knows, there used to be more money for federal transfers to the provinces and territories and there used to be more programs. Still, the major programs — the Canada Health and Social Transfer (CHST) and provincial fiscal equalization — have a fiscal year 1997/98 total cash value of about $21 billion. This section discusses the particular programs and their relative scale across provinces, using Department of Finance estimates of cash transfers to allow timely reporting.[5]

The CHST (or CAP + EPF)

The principal intergovernmental transfer program today is the CHST, which was recently built on the ashes of Established Programs

Table 3: *Federal Transfers to Persons, 1961–95*

	1961	**1966**	**1971**	**1976**	**1981**	**1986**	**1991**	**1992**	**1993**	**1994**	**1995**
	(1995 dollars per capita)										
Newfoundland	586	598	808	1,655	1,697	2,432	2,996	3,382	3,473	3,347	3,099
Prince Edward Island	724	808	1,112	1,877	1,951	2,676	3,081	3,322	3,412	3,198	3,044
Nova Scotia	660	716	984	1,508	1,637	2,127	2,417	2,580	2,669	2,662	2,551
New Brunswick	661	671	937	1,617	1,711	2,270	2,528	2,681	2,775	2,719	2,597
Quebec	467	428	673	1,186	1,224	1,561	1,901	1,978	2,047	1,945	1,857
Ontario	552	560	755	1,054	1,082	1,346	1,631	1,694	1,726	1,662	1,592
Manitoba	615	626	868	1,114	1,351	1,781	2,076	2,134	2,273	2,251	2,266
Saskatchewan	646	576	796	1,075	1,255	1,741	2,037	2,138	2,322	2,230	2,240
Alberta	521	518	687	854	813	1,414	1,481	1,579	1,657	1,615	1,578
British Columbia	712	693	891	1,273	1,243	1,809	1,911	1,956	1,991	1,897	1,824
All Canada	557	546	764	1,153	1,186	1,578	1,838	1,918	1,981	1,903	1,829

Note: The transfers here include those made under the OAS, spouse's allowance, and GIS programs, as well as EI benefits, but exclude CPP/QPP benefits.

Source: Statistics Canada, *Provincial Economic Accounts, Annual Estimates 1961–1995*, cat. 13-213-XDB.

Table 4: *Federal Direct Transfers as a Percentage of Family Income, 1997*

	Census Family Total Income, Post-Tax and Post-Transfer									**Per Family Average**
	≤ $20,000	$20,001–30,000	$30,001–40,000	$40,001–50,000	$50,001–60,000	$60,001–75,000	$75,001–100,000	≥ $100,001	**All**	
	(percent)									*(dollars)*
Newfoundland	52.6	44.8	31.5	25.0	18.0	10.9	6.5	4.0	26.8	7,070
Prince Edward Island	49.3	37.3	27.7	19.8	13.4	8.4	6.2	3.8	20.2	5,915
Nova Scotia	43.0	31.6	22.2	14.8	12.4	9.5	5.8	2.2	18.4	5,010
New Brunswick	43.6	32.7	23.4	14.5	12.8	8.6	5.0	4.8	18.4	5,198
Quebec	36.6	28.9	18.6	13.4	10.1	7.7	4.5	1.6	14.7	4,276
Ontario	34.9	26.8	16.8	12.1	8.2	6.2	3.9	1.3	10.6	3,772
Manitoba	36.6	28.2	15.3	10.3	9.0	5.8	4.0	1.4	12.2	3,896
Saskatchewan	41.2	26.5	16.6	10.0	8.1	5.5	4.0	1.5	13.2	3,886
Alberta	29.1	24.0	13.1	9.4	7.1	4.9	2.4	1.5	9.3	3,167
British Columbia	41.0	22.2	15.7	11.3	7.5	7.6	3.9	1.8	11.0	3,560
All Canada	36.9	27.2	17.4	12.4	8.8	6.8	3.9	1.5	12.2	3,962
	Average dollars per family									
Per family average	4,470	5,640	4,546	3,935	3,322	3,034	2,220	1,498	3,962	

Source: Simulation results derived via Statistics Canada, SPSD/M, release 6.0 (see Appendix).

Table 5: *Employment Insurance Benefits as a Percentage of Family Income, 1997*

	Census Family Total Income, Post-Tax and Post-Transfer									Per Family Average
	≤ $20,000	$20,001–30,000	$30,001–40,000	$40,001–50,000	$50,001–60,000	$60,001–75,000	$75,001–100,000	≥ $100,001	All	
	(percent)									*(dollars)*
Newfoundland	9.6	20.7	19.3	16.1	13.2	8.4	4.7	3.1	12.5	3,291
Prince Edward Island	10.7	14.4	13.0	12.5	8.9	4.7	3.9	3.2	8.8	2,585
Nova Scotia	6.0	9.3	9.7	6.9	6.7	5.7	3.9	1.7	6.3	1,703
New Brunswick	6.9	10.6	12.6	9.2	8.6	6.3	4.1	3.4	7.7	2,169
Quebec	4.9	7.7	8.4	5.8	5.4	4.4	2.5	1.2	4.8	1,393
Ontario	3.7	3.7	4.2	3.9	3.3	2.7	1.9	0.9	2.7	948
Manitoba	2.0	4.2	3.7	3.5	2.3	3.5	2.8	0.7	2.6	845
Saskatchewan	2.6	3.6	3.4	3.5	2.5	2.0	1.5	1.0	2.4	696
Alberta	2.8	3.9	4.1	3.9	2.9	2.6	1.3	0.9	2.4	828
British Columbia	4.4	5.2	4.6	4.2	3.1	4.0	2.6	1.2	3.3	1,065
All Canada	4.3	5.7	6.0	4.8	4.0	3.5	2.2	1.0	3.6	1,154
	Average dollars per family									
Per family average	522	1,179	1,560	1,543	1,503	1,567	1,234	1,012	1,154	

Source: Simulation results derived via Statistics Canada, SPSD/M, release 6.0 (see Appendix).

Table 6: *EI Benefits less Premiums as a Percentage of Family Income, 1997*

	Census Family Total Income, Post-Tax and Post-Transfer									Per Family Average
	≤ $20,000	$20,001–30,000	$30,001–40,000	$40,001–50,000	$50,001–60,000	$60,001–75,000	$75,001–100,000	≥ $100,000	All	
	(percent)									*(dollars)*
Newfoundland	8.5	18.1	15.1	10.8	7.0	2.0	–2.3	–1.5	8.0	2,109
Prince Edward Island	9.0	11.3	8.6	7.3	3.1	–1.6	–2.5	–1.2	4.1	1,210
Nova Scotia	4.6	6.0	4.6	1.0	0.2	–0.7	–2.3	–2.0	1.5	416
New Brunswick	5.5	7.5	7.5	3.1	2.3	–0.5	–3.4	–1.0	2.7	748
Quebec	3.7	4.3	3.2	–0.5	–1.2	–2.8	–5.1	–3.8	–0.5	–149
Ontario	2.4	0.9	–0.7	–2.0	–2.9	–3.9	–4.7	–3.6	–2.4	–873
Manitoba	0.4	0.8	–1.1	–2.5	–3.9	–3.2	–4.4	–3.2	–2.3	–739
Saskatchewan	0.7	–0.2	–1.5	–2.3	–3.4	–3.8	–4.5	–1.9	–2.1	–616
Alberta	0.5	0.1	–1.5	–2.5	–3.3	–4.1	–5.5	–3.5	–2.9	–998
British Columbia	2.2	1.4	–0.3	–1.8	–2.8	–2.0	–4.0	–3.3	–1.8	–599
All Canada	2.8	2.4	0.9	–1.2	–2.2	–3.1	–4.7	–3.4	–1.6	–512
	Average dollars per family									
Per family average	337	505	238	–382	–842	–1,409	–2,638	–3,357	–512	

Note: EI premiums are employee plus employer payments.

Financing (EPF) and the Canada Assistance Plan (CAP).

Established Programs Financing. The relevant aspect of EPF, established in 1977, is that the program was intended to deliver to each province an equal amount of money per capita, the total amount being representative of the historical support the federal government had contributed to aid the provincial provision of health care services and postsecondary education.

The structure of the agreement was that, although provinces held formal responsibility for spending in these areas, Ottawa would help them with funding by a combination of providing cash grants and ceding fixed shares — percentage points — of the federal personal and corporation income taxes collected in each province (hence the phrase "tax point transfers").

The rates of the notional tax transfers are now 14.85851 percent of basic federal PIT and 1 percent of federal corporate taxable income.

Because the tax transfer amounts per capita vary by province, variable amounts of cash are paid in order to bring the total to an equal per capita amount in each province.[6] The tax plus cash amount is determined by an ever-changing formula dependent on population growth, output growth, inflation, and federal whim.

What importance does the cash-plus-tax-points approach have in measuring the federal fiscal impact? In the national accounts, the tax point portion is simply recorded as provincial revenue and thus as neither federal revenue nor federal expenditure, an approach congruent with the view that a given percentage of tax simply has been ceded from one level of government to another. When Canadians complete their income tax forms, the amounts they enter as federal and provincial tax payable represent application of the current federal and provincial tax rates. If the forms reflected the odd federal perspective of the taxation agreements, completing the provincial tax calculation would draw taxpayers' attention to the percentage of provincial tax payable that Ottawa considers to be the share of federal revenue transferred to the provincial government.

In any case, the tax transfers are not included in the modeled transfer incidence. Rather, I have treated the tax points as provincial revenues and ignored the purely notional tax transfer.[7]

The Canada Assistance Plan. The CAP, instituted in 1966, persisted until fiscal year 1995/96, as did EPF. The CAP was an open-ended expenditure-matching program in aid of general wel- fare (and a number of smaller programs). And although the program was sharply curtailed in its later years, it matched welfare costs dollar for dollar in most provinces, subject to some limits on the structure of general assistance programs.

The CHST. Since the inauguration of the CHST, provincial welfare spending has not affected the size of the transfer. Rather, the benefit is simply paid to provinces in accordance with their historical shares of CAP and EPF. To be precise, the cash plus tax total CHST for fiscal year 1996/97 was distributed across provinces according to their 1994/95 CAP entitlements and 1995/96 EPF entitlements. Starting with 1997/98 the total is being adjusted for changes in provincial population shares. Further, since provincial economies grow at different rates (changing the estimated value of the tax point transfer in each province) and the cash transfer is defined as the remainder of the total transfer less the notional tax point portion, the provincial allocation of the actual cash payment is not forever frozen. The tax transfer amounts to a little over $12.7 billion for 1997/98. The total comes to $25.1 billion; thus, 1997/98 is the first year that

the formula produces a tax transfer portion that exceeds the cash transfer ($12.4 billion).

Equalization Payments

The other leg of federal intergovernmental transfers is provincial fiscal equalization. A succinct explanation of the intent of the program is found in a Department of Finance mimeo describing major transfers:

> [Equalization] enables all provinces to provide reasonably comparable levels of public services at reasonably comparable levels of taxation.[8]

The program designed to do so delivers a federal transfer that serves to equalize provincial tax revenues attributed to each of 33 types of provincial and local taxes. (The details of the particular mechanism the Department of Finance uses to implement this equalization are omitted here for the sake of brevity.[9])

The Total

The total cash transferred to the provinces is just the sum of equalization and the cash portion of the CHST. Since the current equalization formula has worked out so that Alberta, British Columbia, and Ontario receive no equalization payments, these provinces' major transfers have included just the CAP and EPF through fiscal year 1995/96 and only the CHST thereafter.

The amount of cash transferred has grown tremendously since the programs' inauguration. The total more than doubled in nominal terms between 1981 and 1991. The peak was in 1995; since then, the combination of economic growth (which increases the tax transfer relative to the cash transfer) and legislated limits on the transfers themselves have shrunk the cash amounts.

The per capita value of the transfers has a wide variation across provinces (see Table 7). For example, while the total cash paid to Ontario under the CHST for 1996/97 was three times the total cash transfer for the CHST plus equalization paid to Nova Scotia, the per capita benefit in Ontario came to less than a quarter of the amount in Nova Scotia.

Striking a Balance

The rest of this *Commentary* relies on the assumption that federal transfers to the provinces affect provincial spending in the ways in which the transfers were originally conceived. This concept is detailed below, followed by an outline of the mechanics of allocating the transfer benefits to families in a manner reflecting this presumption. I then highlight the distributional impact of implementing these assumptions. Finally, I bring them together with my earlier taxation estimates to produce a net impact estimate — the federal fiscal balance with respect to families.

The Assumptions

Obviously, provincial governments spend the money they derive from federal transfers. But *how* do they spend it?

The general presumption I have used here is that transfers in aid of health, education, and welfare are, in fact, spent on these programs. Although the CHST and the earlier EPF were never formally tied to spending on particular programs, one might usefully point to what Arthur Okun named "the flypaper effect," meaning that federal grant money sticks where it hits. The reason for interest in the effect is that one could rationally hypothesize that a regional government considers block grants as no different from any other income enjoyed by residents of the region; the share given to government program spending would then, in

Table 7:   *Federal Cash Transfers to the Provinces, fiscal years 1977/78 to 1997/98*

	1977/78	1982/83	1987/88	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98
				(1995 dollars per capita)					
Newfoundland	1,611	1,789	2,361	2,298	2,277	2,397	2,324	2,304	2,137
Prince Edward Island	1,644	2,053	2,215	2,037	2,040	2,110	2,052	1,948	1,805
Nova Scotia	1,414	1,566	1,640	1,725	1,680	1,843	1,877	1,761	1,645
New Brunswick	1,394	1,671	1,926	1,917	1,821	1,904	1,785	1,679	1,537
Quebec	941	1,191	1,158	1,150	1,179	1,166	1,154	1,166	1,029
Ontario	467	529	568	605	596	587	555	432	343
Manitoba	1,018	1,196	1,470	1,510	1,502	1,637	1,563	1,417	1,304
Saskatchewan	640	648	1,003	1,135	1,132	1,041	871	699	533
Alberta	456	498	691	651	619	560	517	410	327
British Columbia	483	632	717	639	627	617	587	459	382
All Canada	721	848	923	917	910	907	869	778	669

Note: Transfers here are the CHST (EPF and the CAP for fiscal years before 1995/96) and equalization payments.

Sources: Canada, Department of Finance, Federal-Provincial Relations Division, *Canada Health and Social Transfer* (Ottawa, various years, as updated through October 9, 1997); idem, *Established Programs Financing* (Ottawa, various years); idem, *Provincial Fiscal Equalization* (Ottawa, various years, as updated through October 9, 1997); and author's calculations.

principle, be the same share as that taken from any other income source.

Extensive empirical evidence suggests, however, that this is not how governments actually behave.[10] Whether tied or not, increases or decreases in grants seem to cause lower levels of government to increase or decrease the program spending that the grants nominally fund. Analysts report a range of estimates of the degree to which governments respond to grant changes (the revenue elasticity of program spending), but this range is fairly tightly grouped around unity.[11] Furthermore, the response is symmetric when decreases as opposed to increases are considered.[12]

With respect to the CAP, an historical view is useful. Provincial welfare programs evolved over the course of three decades during which the relevant transfers were explicitly tied to those programs. There is no reason to suppose that they suddenly shrank when the funding changed its name and became untied,[13] particularly since the most reasonable explana-tion for the existence and scope of any particular provincial program is that it is what the province's voters and representatives genuinely desire.[14] Thus, the portion of federal CAP money embodied in the CHST might reason-ably be deemed to support provincial welfare spending.

That being said, the history on the point is too short to permit a strong conclusion about Canadian provincial spending in the era of un-tied transfers. To proceed with this analysis, however, I have acted as if consumers of health, postsecondary education, and welfare services derive commensurate benefit from the transfers Ottawa delivers to provincial governments in the name of those programs. To indicate the sensitivity of my results to the allocation mech-anism, I also calculated an alternative "equal per capita" attribution.

The case of equalization is slightly different, and its correct analytical treatment more obvious. Equalization has never been tied, not even notionally, to any particular provincial

service; it is tax revenue and only tax revenue (of numerous types) that appears in the equali-zation formula. Recalling the intent of equalization as expressed in the *Constitution Act, 1982*,

> Parliament and the Government of Canada are committed to the principle of making equalization payments to ensure that provincial governments have sufficient revenues to provide reasonably comparable levels of public services at reasonably comparable levels of taxation (section 36(2)),

I have presumed that equalization entitlements do not affect provincial service delivery. Instead, I assumed that, from the point of view of the individual, equalization increases total federal taxes by precisely the amount of the total equalization entitlement. Provincial taxes, therefore, are lower than they otherwise would be, lower by exactly the amount of equalization received in each province.

Implementation

The mechanics of allocating these transfers must be explained before I introduce their distributional impact.

Ottawa, as already explained, allocates the CHST across provinces according to historical entitlements for the CAP and EPF. We thereby know exactly what amount of money is being transferred to the provinces in notional support of health care, postsecondary education, and welfare. For the exercise here, I took this categorization of funds for granted. I then allocated to each family within a province the amount transferred to it in each transfer category, according to estimates of those families' consumption of the relevant provincially provided services.

Health

Within the various transfer categories, the allocation of health care benefits is the most specu-lative. One might go about attributing noncash health care benefits in a number of ways[15] but my view is that what provinces provide is health insurance.[16] They may not do so explicitly; indeed, they pay directly for hospitals, doctor visits, and diagnostic services, as well as for prescription drugs for the elderly and the poor. But although the provinces do not sell insurance, the benefit actually provided to a family is implicit insurance against being faced with the incremental costs of purchasing those services in the event of illness or accident.

This approach has not only an intuitive appeal, but also a practical value. For my exer-cise, the microsimulation model carries no data about use of health care services that might provide a direct estimate of the distributional impact of health care benefits. But one can impute to individuals the benefit of a notional insurance provision by drawing on usage data from the Canadian Population Health Survey, which shows the number of hospital patient-days "consumed" by individuals by age, by sex, and by province. The benefit to be imputed is then calculated as the provincial health care transfer divided by the number of patient-days per person in each category. This is to say, the number of hospital patient-days, by age and by sex, represents the risk of an individual's requiring health services. Regardless of the total amount of provincial health care spending, the dollar value assigned according to this risk is the portion covered by the federal cash transfer.

The use of hospital patient-days happens to be a good proxy for the demographic distribution of provincial health care spending. Granted, data are available that might improve the estimate of the premium within the insurance model.[17] For example, numbers of doctor visits — by age and sex or other variables — could be used to allocate the share of physician billings whose coverage would then be attributed to the notional health care portion of the CHST, a tack that would tilt the distribution of

benefits toward families with young children. Likewise, including provincial prescription drug purchases for seniors would tilt the imputed benefit toward families with elderly members (particularly toward elderly who are single, because of that group's high rate of institutionalization). In short, data exist that could be used to refine the estimate I use, but their effect on the distribution would be muted because hospital costs make up the dominant share of provincial health care spending.[18]

Postsecondary Education

The postsecondary education benefit is conceptually simple and mechanically less difficult to model. The SPSD/M reports information on educational level and status sufficient to make a reasonable guess at the number of full-time and part-time enrollees in postsecondary institutions.

As in the case of transfers for health care, actual provincial spending on education does not matter; the imputation to students is just the historical share of the CHST attributable to cash transfers for postsecondary education under EPF. In making a rough pass at estimating the cost to universities of servicing students of different types, I attributed to each part-time student one-third the benefit of a full-time student. The number of students in each category multiplied by the per student imputation amount yielded the total notional postsecondary cash transfer for the province.

Welfare

Estimating the distribution of federal support for social assistance was straightforward. The Survey of Consumer Finances records family welfare income, information reflected in the SPSD/M database records for each family, from which provincial totals are derived. Of the estimated welfare income in each province, a given share is nominally attributable to the historical CAP share of the CHST. The model can be re-estimated attributing that federal share to welfare-receiving families in a fixed proportion, which differs across provinces according to their CHST allocation and total welfare spending.

To put the point another way, the federal transfer contribution to a particular family's welfare payment is the same percentage that the nominal federal cash contribution for welfare under the CHST contributes to the relevant province's total general welfare bill.

Equalization

I treated provincial fiscal equalization differently and separately for the reasons already described.

The impact of the equalization program is best illustrated by means of a what-if exercise. What if the equalization transfers were replaced in each province by lower federal taxes and higher provincial taxes, the change in each case being precisely equal to the transfer? In other words, what would happen in the absence of the equalization program, when total federal taxes could be lower but provincial taxes in "have-not" provinces would be higher by the same total dollar amount?

To model the cost side of the equalization program (which taxpayers would not pay if the program did not exist), I scaled each individual's total federal tax downward by a uniform percentage such that the total revenue loss to the federal government was equal to the total cost of equalization. To model the benefit side of the equalization program (the new cost to provincial taxpayers if the program did not exist), I scaled each individual's total provincial tax upward so that each province's total revenue increased by the amount of its forgone equalization entitlement.

Given that viewing equalization as a tax transfer without specific impact on services is

reasonable, there remain possible objections to the approach I took in implementation. The main one is that if provinces were to raise taxes precisely to offset lost equalization, they would not do so in the way I describe here.[19] The argument can be decomposed into two parts: the amount of tax to be raised in the personal sector, and the distribution of that amount across income groups within a province.

Expressing the transfer as a percentage of family income leaves moot the question of the amount. It does not matter whether the incremental tax is actually raised in the personal sector or any other particular sector. The amount that must be raised in all sectors is determined only by the equalization program, and we are perfectly free to view the implicit redistribution of this tax revenue across provinces as a share of personal income.

The response to the distribution question is that since the SPSD/M captures most provincial revenue, the fact that a share of incremental tax might be raised through other taxes would not much affect the distribution. Even if more money were raised via increased corporation and other taxes, incidence analysis relying on small, open economy assumptions[20] suggests that the distribution would be much like the total incidence of the consumption and income taxes that are modeled here.[21]

In other words, including unmodeled taxes would have little effect on the distributional analysis because they have incidences rather like the taxes that are modeled. (This conclusion is not surprising, considering, for example, that the usual approach in the public finance literature is to divide the assumed incidence of the corporation income tax between income and consumption. The effect of including such an incidence would be arithmetically unlikely to change the estimated broad incidence of income and consumption taxes.)

The additional provincial taxes might, of course, be raised through surtaxes and the like so that the burden would be skewed upward along the income scale. Likewise, the hypothetical federal tax reduction might be implemented by eliminating only taxes that bear on low-income families. Such assumptions would lead to a more progressive impact of equalization than my method can be expected to imply.

The special merit of the approach I chose is that it relies only on the assumption that federal taxes could be distributed in exactly the way they actually are, but at lower rates with respect to every individual's income. Similarly, it assumes that provincial taxes could be distributed in just the same proportions they are now, as measured across income brackets, but at higher rates.

Distributional Impact of the CHST

In estimating a distributional impact of the CHST, I developed two scenarios: one in which I assumed that the CHST pays for health care, postsecondary education, and welfare benefits, which can be imputed to a provincial population according to its demographic characteristics; and another in which the imputation is simply per capita.

Demographic Imputation

For the first scenario, I accepted as correct the line of argument taken in the preceding subsection. Thus, I modeled the total CHST as the linear sum of the three categories of benefit imputed to households, relying on the assumption that it is these benefits that the transfer is financing. Table 8 shows the results for 1997.

The pattern across provinces again follows provincial income levels, with the poorer provinces receiving larger shares of income via the transfer. This pattern is partly a result of the fact that the cash portion of the CHST is larger relative to the tax transfer portion in the poorer provinces relative to the richer.

What is most striking is the low federal contribution in British Columbia, Alberta, and Ontario. This outcome is the indirect result of those provinces' having higher average incomes than others; it is the direct result of the growth limits on the CAP, imposed in 1990, which manifested themselves in the initial provincial allocation of the CHST.

The indirect federal transfer contribution in the three "have" provinces ranges from 2.8 percent to 3.1 percent of province-wide income; in all other provinces, it goes from 4.0 percent to 6.1 percent. Thus, the CHST contribution to income in the poorer provinces ranges from one-third to fully twice as large as the contribution to income in the well-to-do provinces.

Across income levels, the distribution appears quite progressive in the sense that the transfer share is larger in low-income families. This pattern follows naturally from two facts. First, consumers of postsecondary education are students, many of whom have lower incomes than individuals with firmer and longer attachments to the labor market. Second, seniors stand out as consumers of health care because of their concentration in low-income family units and their relatively high hospital usage rates.

All the same, the progressivity of the income distribution of benefits may be somewhat overstated for a number of reasons. One is that the SPSD/M database identifies many students in their own census families, not those of their parents, thus perhaps understating the income available for their consumption. (Historically, students at the postsecondary level tend to come from families with higher-than-average incomes.)

Another issue is that the *lifetime* income benefits of postsecondary education tend to accrue to high-income individuals because people with more years of education, particularly those with degrees, earn substantially more than those with fewer years or without de-grees.[22] Although that fact seems obvious, it is typically forgotten in the presumption that benefits delivered primarily to low-income families necessarily have a progressive impact, even if those families include students at the postsecondary level.

The question of lifetime incidence also pertains to benefits delivered to seniors. They are found disproportionately in low-income families, so the benefits associated with health care use are also attributed disproportionately to those families. But current-year income does not necessarily represent the lifetime well-being of a given senior, who may be drawing down savings made in earlier years. Thus, it may not be entirely correct to assume that the observation of transfer payments accruing to low-income families represents a progressive outcome.

Equal per Capita Allocation

My second scenario for attributing the benefits of intergovernmental transfers denied the credibility of imputation on the basis of program spending or service utilization. Instead, I viewed the transfer as a purely fiscal exercise and estimated the per capita value of the cash transfer (the provincial CHST allocation divided by the population), and attributed this amount to census families according to the number of members. Table 9 sets out the results.

This scenario still yields a progressive impact across income groups within a province because the transfer represents a larger share of income for lower-income families. But the implied distribution is much less progressive than that shown in Table 8 because benefits are not differentially attributed to particular types of families — thus ignoring the facts that those known to be heavy consumers of provincial government services such as health and education tend to fall in lower-income brackets and that larger families tend to have higher incomes than smaller families.

Table 8: *Federal Cash Transfers for Health, Education and Welfare as a Percentage of Family Income, Using Demographic Imputation Method, 1997*

	Census Family Total Income, Post-Tax and Post-Transfer									Per Family Average
	≤ $20,000	$20,001–30,000	$30,001–40,000	$40,001–50,000	$50,001–60,000	$60,001–75,000	$75,001–100,000	≥ $100,000	All	
	(percent)									*(dollars)*
Newfoundland	17.6	7.9	4.8	2.6	1.7	2.6	2.8	3.1	6.1	1,596
Prince Edward Island	14.0	6.9	4.0	2.7	2.4	2.2	1.4	1.2	4.2	1,225
Nova Scotia	14.5	6.8	3.8	2.7	2.1	2.3	2.2	1.3	4.7	1,281
New Brunswick	15.2	6.7	3.9	2.8	1.8	2.0	1.7	1.3	4.5	1,279
Quebec	18.8	7.5	4.2	2.3	1.7	1.6	1.3	0.9	4.8	1,401
Ontario	11.1	6.9	3.5	2.6	1.7	1.5	1.3	0.9	2.9	1,026
Manitoba	14.3	6.8	4.5	2.5	2.0	2.4	1.9	1.2	4.1	1,297
Saskatchewan	14.2	6.5	3.6	2.2	2.2	1.9	2.0	1.0	4.0	1,174
Alberta	11.1	5.7	2.9	1.9	1.7	1.4	1.3	0.9	2.8	960
British Columbia	15.9	5.4	3.4	2.3	2.0	1.4	1.4	0.8	3.1	1,020
All Canada	14.6	6.7	3.7	2.4	1.8	1.6	1.4	0.9	3.6	1,153
	Average dollars per family									
Per family average	1,775	1,397	971	778	670	701	778	880	1,153	

Note: Transfer amounts used in the calculations are for fiscal year 1996/97.

Source: Simulation results derived via Statistics Canada, SPSD/M, release 6.0 (see Appendix).

In brief, if the benefits of the CHST really are equal per capita within a province, those benefits are delivered to a greater extent to high-income families; if the transfer actually funds health care, education, and welfare, low-income families reap a larger share.

Because the latter assumption seems more likely to mirror reality, it is the one I used in most of the modeling here. As I go along, however, I point out the direction the results would have taken if I had chosen the alternative.

The Distributional Impact of Equalization

As already described, I treated equalization as a simple transfer of tax revenue from the federal government to provincial governments, so the net national impact totals zero. But it is certainly not zero across provinces. Most obviously, British Columbia, Alberta, and Ontario receive no equalization payments.

Taxpayers in all provinces lose a percentage of income in paying for the transfers; taxpayers in receiving provinces typically gain a larger percentage of income. This distributional impact of equalization is shown in Table 10. The cost of paying for the equalization program totals about 2.0 percent of income, as reflected in the "all" column entries for British Columbia, Alberta, and Ontario. Taxpayers in receiving provinces make a similar contribution, but they receive an offsetting benefit (equalization payments), which yields a net benefit ranging from 2.4 percent of income in Quebec to 15.4 percent in Newfoundland. The reason the implied benefit is so large, particularly in the Atlantic provinces, is the large size of the equalization program relative to provincial government tax revenue — and to provincial total income.

This perspective allows us to pick out an interesting feature of equalization as it affects Saskatchewan. Federal tax incidence is such

Table 9: *Federal Cash Transfers for the CHST as a Percentage of Family Income, Using "Equal per Capita" Imputation, 1997*

	Census Family Total Income, Post-Tax and Post-Transfer									Per Family Average
	≤ $20,000	$20,001–30,000	$30,001–40,000	$40,001–50,000	$50,001–60,000	$60,001–75,000	$75,001–100,000	≥ $100,000	All	
	(percent)									*(dollars)*
Newfoundland	8.9	7.6	6.7	5.8	5.3	4.8	4.2	2.6	6.1	1,596
Prince Edward Island	5.9	5.9	4.6	4.5	4.2	3.7	3.3	2.0	4.2	1,227
Nova Scotia	6.9	5.9	5.3	5.0	4.7	4.0	3.5	1.8	4.7	1,281
New Brunswick	6.5	5.7	5.5	4.9	4.6	4.0	3.2	1.9	4.6	1,279
Quebec	6.4	6.1	5.6	5.6	5.1	4.6	3.9	2.2	4.8	1,401
Ontario	4.8	4.0	3.5	3.4	3.2	2.9	2.4	1.5	2.9	1,025
Manitoba	5.9	5.5	5.1	4.7	4.6	3.9	3.2	1.9	4.1	1,298
Saskatchewan	6.5	5.7	4.9	4.7	4.0	3.6	3.0	1.5	4.0	1,173
Alberta	5.0	3.9	3.5	3.3	3.0	2.7	2.2	1.3	2.8	959
British Columbia	6.6	4.0	3.7	3.4	3.3	3.1	2.5	1.6	3.2	1,021
All Canada	5.8	4.8	4.3	4.1	3.8	3.4	2.8	1.6	3.6	1,153
	Average dollars per family									
Per family average	710	993	1,128	1,312	1,421	1,534	1,571	1,608	1,153	

Note: Transfer amounts used in the calculations are for fiscal year 1996/97.

Source: Simulation results derived via Statistics Canada, SPSD/M, release 6.0 (see Appendix).

that, although it is a receiving province, Saskatchewan emerged as neither a gainer nor a loser in fiscal year 1996/97 (the year I selected here as the most relevant to the simulation). in that year, Saskatchewan's taxpayers were neither better nor worse off through the existence of provincial fiscal equalization. For 1997/98, however, the province's equalization entitlement dropped sharply, so its taxpayers emerged as net losers *vis-à-vis* equalization.

The impact of equalization across income levels within and across provinces is also apparent. On this accounting, lower-income families in nonreceiving provinces pay federal taxes worth 1 to 2 percent of income in order to finance equalization. The implicit benefit to families in the same income brackets but living in receiving provinces ranges up to 12 percent of income. Looking higher up the income scale, the net benefit of the equalization program in receiving provinces ranges from nil to 30 percent of income.

The benefit is larger for high-income families than for low-income ones within a province because the measure is the difference between actual provincial taxes and the amount that would have to be collected to match the equalization grant to the province.

Because my accounting unit is the burden as a percentage of income, the reporting is easy. If the impact of equalization is that provincial taxes are half what they would otherwise be, someone who is paying a tax of 5 per-cent of income is getting a modeled implicit benefit of 5 percent of income, and a higher-income person who is facing a provincial tax burden of 15 percent of income gets a modeled benefit of 15 percent of income.

The Net Net: Transfers less Taxes

Accounting for the allocation of transfers to households provides the information needed

Table 10: *Federal and Provincial Impact of Equalization,*
as a Percentage of Family Income, 1997

	Census Family Total Income, Post-Tax and Post-Transfer									**Per Family Average**
	≤ $20,000	**$20,001– 30,000**	**$30,001– 40,000**	**$40,001– 50,000**	**$50,001– 60,000**	**$60,001– 75,000**	**$75,001– 100,000**	**≥ $100,000**	**All**	
	(percent)									*(dollars)*
Newfoundland	9.0	10.4	12.4	12.3	17.6	18.2	23.4	29.7	15.4	4,064
Prince Edward Island	7.0	7.4	7.8	9.2	9.4	9.8	10.9	13.2	9.4	2,742
Nova Scotia	5.0	6.5	7.5	7.8	8.9	8.7	11.1	13.9	8.6	2,331
New Brunswick	4.9	5.8	6.8	7.8	8.0	8.7	11.1	14.2	8.4	2,365
Quebec	0.8	1.4	1.8	2.0	2.4	2.6	3.3	4.5	2.4	704
Ontario	–0.7	–1.1	–1.6	–1.8	–2.1	–2.2	–2.6	–3.0	–2.1	–762
Manitoba	2.6	3.1	3.6	4.3	4.4	4.8	6.1	8.2	5.0	1,601
Saskatchewan	0.2	0.0	0.0	–0.1	–0.1	–0.1	–0.1	0.2	0.0	6
Alberta	–0.9	–1.3	–1.7	–2.0	–2.0	–2.3	–2.6	–3.0	–2.2	–734
British Columbia	–1.0	–1.4	–1.7	–2.1	–2.1	–2.0	–2.6	–2.9	–2.2	–698
All Canada	0.5	0.4	0.3	0.1	0.1	0.1	–0.2	–0.6	0.0	0
	Average dollars per family									
Per family average	62	76	68	44	28	23	–121	–546	0	

Note: Transfer amounts used in the calculations are for fiscal year 1996/97.

Source: Simulation results derived via Statistics Canada, SPSD/M, release 6.0 (see Appendix).

to look at the net impact in context. Thus, this section presents a summary of families' fiscal balance with respect to the federal government. This balance reflects the sum of federal direct transfers to persons and indirect transfers (the latter being the value of noncash benefits funded by federal transfers to provinces and imputed to families) less all federal taxes.

Table 11 sets out the results. A positive net balance means that a family received more in federal transfers than it paid in taxes. A negative balance signals that a family paid more in taxes than it received in benefits. Overall, the total dollars represented by the negative amounts here reflect the net contribution of the personal sector to the federal government, as collected through the modeled income and consumption taxes. It is the amount of money paid to the federal government (through these taxes) that is available to fund interest payments and purchases of goods and services.

An important part of this exercise is the inclusion of provincial fiscal equalization in the federal relationship with individuals. But because of the way the model was set up, equalization requires special consideration in cal-culating the net results. Since the transfer was measured via an implicit decrease in provincial taxes in the receiving provinces, it is contained, though not explicitly shown, in Table 1 0 (the overall average was 2.0 percent of income). And one does not have to subtract the associated federal tax since this amount is already included in federal tax payable.

Thus, for example, the countrywide net was calculated, using the "all/all" percentages of income in the tables indicated, as

Direct transfers (Table 4)	12.2%
CHST transfer (Table 8)	3.6
Equalization (implicit in Table 1 0)	2.0
Taxes payable (Table 2)	–28.5
Net	10.7%

Table 11: *Federal Net Balance as a Percentage of Family Income, 1997*

	Census Family Total Income, Post-Tax and Post-Transfer									Per Family Average
	≤ $20,000	$20,001–30,000	$30,001–40,000	$40,001–50,000	$50,001–60,000	$60,001–75,000	$75,001–100,000	≥ $100,001	All	
	(percent)									*(dollars)*
Newfoundland	70.8	48.5	28.0	15.7	8.4	1.1	0.1	1.2	25.4	6,690
Prince Edward Island	61.2	36.8	19.8	7.1	–2.3	–8.9	–13.0	–12.8	10.2	$2,976
Nova Scotia	52.8	28.6	10.8	–1.1	–6.5	–10.4	–13.6	–18.0	6.6	1,807
New Brunswick	54.4	29.6	11.6	–1.9	–6.8	–11.3	–16.0	–14.8	6.2	1,738
Quebec	48.4	23.0	3.2	–7.6	–13.5	–17.7	–21.8	–27.0	–2.2	–652
Ontario	36.2	18.8	–2.8	–12.3	–21.2	–24.9	–29.7	–36.9	–16.1	–5,742
Manitoba	43.8	22.4	2.1	–8.0	–12.1	–16.3	–20.8	–25.4	–4.9	–1,551
Saskatchewan	44.9	16.0	–1.5	–14.1	–18.2	–22.1	–25.6	–34.8	–9.0	–2,659
Alberta	28.8	11.3	–9.0	–18.1	–21.9	–27.3	–31.4	–35.8	–17.6	–6,007
British Columbia	44.1	8.4	–5.2	–16.4	–21.4	–23.5	–29.9	–35.6	–15.9	–5,156
All Canada	42.8	19.1	–0.5	–10.9	–17.9	–21.9	–27.0	–33.7	–10.7	–3,480
Average dollars per family										
Per family average	5,191	3,959	–133	–3,469	–6,731	–9,828	–15,243	–32,849	–3,480	

Notes: Net balance is federal direct and indirect transfers less federal taxes. Transfer amounts used in the calculations are for fiscal year 1996/97.

Source: Simulation results derived via Statistics Canada, SPSD/M, release 6.0 (see Appendix).

Figure 1 graphically represents the highlights of the results shown in Table 11.

On balance, the average family pays to the federal government 10.7 percent of income after taxes and transfers, a net tax bill of about $3,500 per family nationwide. The burden is extremely unequal across provinces; in Alberta, the average census family pays about $6,000 to the federal government, while in Nova Scotia, the average family receives $1,800.

This accounting shows surprising results for the distribution of the net burden with respect to income. On balance, families earning $30,000 to $40,000 in Saskatchewan, Ontario, British Columbia, and Alberta face net contribution rates ranging from 1 to 9 percent of income, while families earning $40,000 to $50,000 in Prince Edward Island and Newfoundland are net recipients, receiving 7 and 16 percent of income from the federal government.

Apparent horizontal inequalities appear even among families on the same side of the net balance. For example, families in New Brunswick with $50,000 to $60,000 in total income are net contributors of 7 percent of income, while those of the same income level in Alberta are net contributors of three times as much. The implicit burden is rather different.

It is also interesting to compare families from different income groups and different provinces. In British Columbia, for example, families with $20,000 to $30,000 in income are net recipients of 8.4 percent of income; families in Newfoundland with $50,000 to $60,000 in income receive the same 8.4 percent. Yet the usual notion of vertical equity is that those of increasing means pay more (or receive less) than those of poorer means.

So far, my analysis has employed the demographic imputation of indirect transfer benefits described in relation to Table 8. If, instead, I had used the per capita allocation of CHST benefits from Table 9, the net benefits would be skewed up the income scale. For example, the

Figure 1:   *Net Balance (Direct and Indirect Federal Transfers less Federal Taxes), 1997*
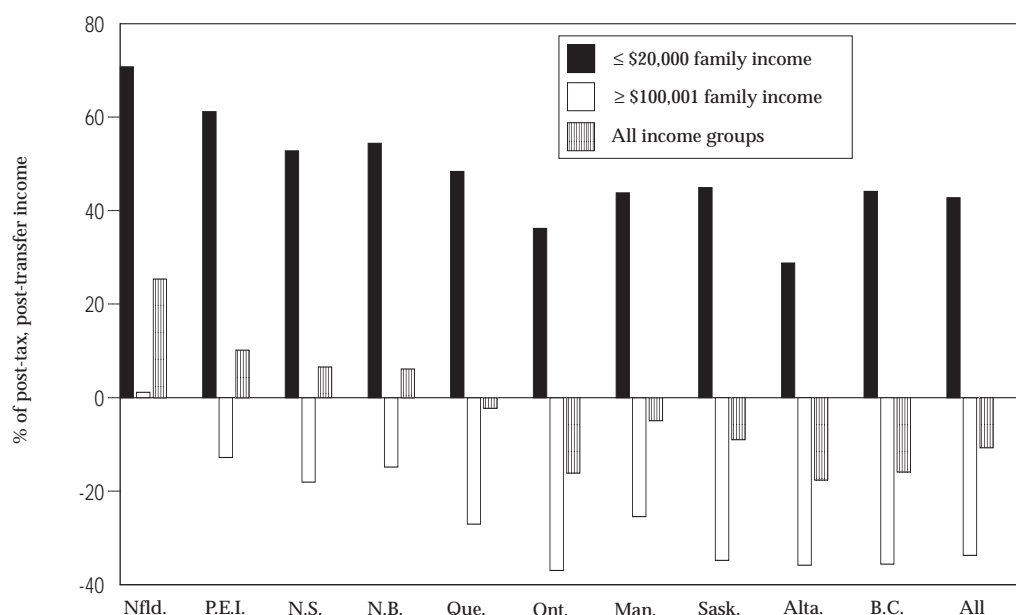
Source: See Table 11.

transfer benefit for Newfoundland families with $75,000 to $100,000 in income would be 4.2 percent of income, not the 2.8 percent I obtained using the demographic imputation method. Overall, these high-income families would show up as net recipients of 1.5 percent of income instead of 0.1 percent, an increase of about $1,000 per family in that category. In other words, the demographic imputation method mutes the extent to which benefits appear to be delivered up the income scale.

Another issue to be aware of is that, if federal tax/transfer design resulted in taxes and transfers that were each much higher (or lower) than the amounts reported here, the net balance for any given household would look the same so long as the differences were symmetrical. In practice, however, it would never do to imagine that household incentives and behavior would remain the same in the presence of extremely high (or low) tax and transfer rates.

This reminder is a way of highlighting the fact that this paper is an analysis of balances, in the sense of household balance sheets, and that program analysis needs to be informed by an understanding of marginal incentives, not just net impacts.[23] In considering program impacts, we need to think about not only the direct effect on household financial balances but how transfer and tax design affect the household's net return on the next dollar of income.

Conclusion

This *Commentary* is about balance. Canadians pay a lot of money in federal taxes, but individuals also receive a lot of money in transfers. Where is the balance? How much does it depend on the province in which an individual happens to reside? How much does it depend on his or her income? These are the questions addressed here.

While it is natural that Canadians should compare their own tax burden with that of their neighbors in geography and in income, it is difficult to do so across provincial boundaries. It is particularly difficult to do so when estimating that burden is complicated by substantial transfers between levels of government, rendering the incidence essentially unobservable.

By themselves, federal taxes and transfers with respect to individuals do not vary much across provinces, but they do vary across income levels. However, since the distribution of income differs in each province, the aggregate impact of the federal government appears quite different across provinces.

Another important point is the role of intergovernmental transfers in funding benefits to households. Within a province, the apparent impact of these transfers appears to be quite progressive. (There is some room for skepticism on the point because the cross-sectional view taken here does not allow estimation of the ultimate lifetime incidence of taxes or transfers.)

Indirect transfers significantly amplify the redistributive effect of federal direct transfer programs. Moreover, the historical development of the transfer mechanisms has led the total and per capita amounts delivered to display important differences across provinces. In some cases, the combined impact is regressive, since the sheer size of transfer programs requires raising large amounts of federal tax money across all provinces and income brackets. Meanwhile, the incidence of the benefits of those programs is inharmonious with the tax, the result being that the well-to-do in some areas benefit at the expense of those not so fortunate in geography or income.

I began this *Commentary* by noting Canadians' confusion over which government pays how much for what. The point is one of much more than academic interest.

The design of a tax/transfer system is bound to be complex in a federation, but if it is not sufficiently transparent for citizens (and their political representatives) to have some idea of the matching of taxes, spending, and benefits, misunderstanding will be compounded and the sense of responsibility for the ultimate distribution impaired. And if the system is not both fair and perceived to be fair, public trust will be diminished and the "consent of the governed" manifested with less certainty.

Appendix:
The Microsimulation Model

This study relies on Statistics Canada's Social Policy Simulation Database and Model (SPSD/M), release 6.0, which became available in November 1997. It draws on the 1992 Survey of Consumer Finance, the Family Expenditure Survey, Revenue Canada's sample of T1 personal income tax returns, and the administrative database of unemployment insurance claim histories.

The database constructed from these sources consists of 79,762 household records, which are scaled up, according to 1992 population weights, for a 1997 total (as modeled here) population of 12.9 million families and 29.2 million individuals. Incomes are scaled to current nominal values, guided by relevant System of National Accounts indicators so that the aggregates are brought in line with results from other sources and methods. In modeling the 1997 tax/transfer world, I used the 1997 tax code and transfer rules and parameters as they actually exist at both the federal and provincial levels.[24]

The Model

The SPSD/M is a static microsimulation accounting model of the financial relationship between households and the federal and provincial governments. Not included are direct relationships between households and the corporate sector or relationships between different levels of governments; neither are municipalities modeled (although data are maintained on household property taxes).

The model is called a microsimulation model because it estimates taxes and transfers at the individual and household level and aggregates the results to arrive at provincial and national estimates. The model is static in the sense that when an analyst imposes changes in tax or transfer parameters in order to estimate their fiscal impact, individual and government behavior is assumed not to change.

The denominator for my distributional analysis is post-tax, post-transfer income, which is defined in the SPSD/M as the sum of market income (income from employment, self-employment, investment, and other private sources) and transfer income (cash transfers from federal and provincial governments) less all taxes. ("All taxes" notably includes consumption taxes, a particularly useful feature of the SPSD/M that allows post-tax, post-transfer income to represent a true "consumable income," the value of which represents personal disposable income less the consumption tax liability incurred via the purchase of consumer goods and services.)

In this study, the income denominator also includes the imputed transfer benefit. But since the topic of the paper is the strictly financial relationship between individuals and the federal government, the benefits of other government spending on goods and services are not included in the household income base. For example, the benefits of protective services and highway maintenance, although they may contribute to household well-being, are excluded.

The measure of federal taxes used in the distributional analysis — the numerator — is intended to roughly correspond to the national aggregates described above, which means federal income taxes and consumption taxes plus sundry items such as benefit repayments. Employment insurance premiums are included as taxes (mostly because the scheme resembles a federal tax/transfer program more closely than it does an insurance mechanism).

The employer share of EI premiums is also attributed directly to households. If one accepts the near-certainty of the long-run incidence of payroll taxes bearing directly on wage earners,[25] then it is reasonable to apply

that incidence assumption in a short-term analysis as well; this is a mild departure from the otherwise straightforward accounting basis that makes sense.

One could make the same sort of arguments in the case of the CPP/QPP, but I do not do so.[26] In order to better accord with national accounts definitions, I adjusted the simulation model definitions to exclude CPP/QPP contributions from federal direct taxes; naturally, the resultant pensions are also excluded from federal transfers to persons, though they are included in market income.

As noted in the main text, the census family is the unit of analysis. The income of each member of a census family is included in the family total, as are the taxes paid by or imputed to each member. The dollar value of family total income, excluding indirect transfers, is the measure used for each income bracket in the distributional tables, in order that the reader readily recognize his or her own status *vis-à-vis* provincial and national averages.

The cross-sectional nature of microsimulation models enables reasonable point estimates of the aggregate tax burden, but the lack of a longitudinal or time series component of the database renders difficult a defensible estimate of the actual lifetime burden of taxation. Even though one can select for analysis a precisely structured range of ages, one cannot say with any certainty that the resultant estimate of the burden reflects the lifetime burden faced by a taxpayer representative of the sample. Lifetime estimates might be built up by employing data derived via microsimulation,[27] but doing so requires abandoning the more-or-less concrete accounting foundation of static microsimulation.

As noted in the text, the lack of lifetime estimates becomes an issue when the question arises of whether, for example, education or health care benefits delivered to an individual at a stage of life when current income happens to be low necessarily indicates a progressive impact.

Incidence Assumptions

For the most part, this paper assumes that he who pays the tax bears the tax; exceptions to the general rule are explained in context.[28]

Despite their name, indirect taxes are treated as taxes bearing directly on individuals. An argument on this point may have been possible in the past, but with the goods and services tax now dominating the indirect tax category, the inescapable conclusion is that households pay this tax in the main.

The incidence of the corporation income tax or specific taxes on capital is not estimated here. There remains significant and probably permanent uncertainty over the share of corporate earnings properly attributed to any particular household, the share of tax paid by holders of capital in those households, the amount by which corporation taxes depress wages and increase consumer prices.

Uncertainty aside, the knowledge gained by including the distributional impact of corporation taxes in this analysis would be minor because their sum total is small relative to personal income and their distribution is probably just proportional to income. Hence the only assumption that I make on this point is a neutral one: that the ultimate incidence of federal taxes on corporations is at least proportional to personal income[29] and rather like the total impact of other tax types taken together.[30] Moreover, in keeping with the focus on the individual, the discussion refers only to direct taxes on persons and indirect taxes.

Notes

This paper has received the benefit of criticism and comments from Kenneth Boessenkool, Paul Boothe, Angela Ferrante, David Laidler, Brian Murphy, Bill Robson, Giuseppe Ruggeri, and Glen Veikle. These generous benefactors are not to be held responsible for any remaining error.

1 National accounts basis per Statistics Canada, *Provincial Economic Accounts, Annual Estimates 1961–1995*, cat. 13-213-XDB.

2 This relationship held true for eight out of ten provinces in 1995. The other two, New Brunswick and Nova Scotia, despite having average income below the national average, had the ratio of federal tax shares to income shares very close to unity.

3 Responsibility for the results and their interpretation lies with me.

4 This view of the program as a transfer of resources follows from the use of EI as a tool of social policy. If it were simply an insurance scheme, fully funded by risk-adjusted premiums, whether or not privately run, it would not be viewed as a federal tax/transfer program and, therefore, not subject to examination with respect to cross-province transfer of resources. This is not to deny that the program has made important steps along the route to a full insurance model, as discussed in Alice Nakamura, *Employment Insurance: A Framework for Real Reform*, C.D. Howe Institute Commentary 85 (Toronto: C.D. Howe Institute, October 1996).

5 Canada, Department of Finance, Federal-Provincial Relations Division, *Canada Health and Social Transfer* (Ottawa, various years, as updated through October 9, 1997); idem, *Established Programs Financing* (Ottawa, various years); idem, *Provincial Fiscal Equalization* (Ottawa, various years, as updated through October 9, 1997).

6 At least for the health and education shares attributable to the CHST. The *total* CHST is not an equal per capita amount; see Kenneth J. Boessenkool, *The Illusion of Equality: Provincial Distribution of the Canada Health and Social Transfer*, C.D. Howe Institute Commentary 80 (Toronto: C.D. Howe Institute, June 1996).

7 Discussions of the rather persuasive case for considering only the cash portion of federal transfers to be the relevant indicator are found in a number of places, notably Odette Madore, *The Transfer of Tax Points under the CHST*, Background Paper BP-450E, Parliamentary Research Branch, Library of Parliament (Ottawa: Library of Parliament, 1997); and Boessenkool, *The Illusion of Equality*.

8 Canada, Department of Finance, "Provincial Fiscal Equalization" (Ottawa, 1996), mimeographed.

9 The workings of the equalization program are well explained in, for example, ibid.

10 Such evidence is summarized in James R. Hine, Jr. and Richard H. Thaler, "The Flypaper Effect," *Journal of Economic Perspectives* 9 (4, 1995): 217–226.

11 Ibid., 219.

12 Shama Gamkhar and Wallace Oates, "Asymmetries in the Response to Increases and Decreases in Intergovernmental Grants: Some Empirical Findings," *National Tax Journal* 49 (4, 1996): 501–511.

13 Of course, some provinces did reorganize their welfare mechanisms quite quickly when the program did become untied and the funding shrank relative to costs; see Kenneth J. Boessenkool, *Back to Work: Learning from the Alberta Welfare Experiment*, C.D. Howe Institute Commentary 90 (Toronto: C.D. Howe Institute, April 1997).

14 Due notice should be taken of the fact that under the CAP provinces were spending dollars for which they had to bear the political cost of raising only 50 cents in taxes.

15 Alternatives are explored in Grant Cameron and Michael Wolfson, "Missing Transfers: Adjusting Household Incomes for Noncash Benefits" (paper presented to the 23rd general conference of the International Association for Research in Income and Wealth, St. Andrews, NB, August 21–27, 1994).

16 The insurance model of household benefits is discussed in Timothy M. Smeeding et al., "Poverty, Inequality, and Family Living Standards Impacts across Seven Nations: The Effects of Noncash Subsidies for Health, Education, and Housing," *Review of Income and Wealth* 39 (3, 1993): 229–256.

17 The methodology is outlined in Cameron and Wolfson, "Missing Transfers." A similar route is followed in Chantal Hicks, "The Age Distribution of the Tax/Transfer System in Canada" (paper presented to the conference "Intergenerational Equity in Canada," Statistics Canada, Ottawa, February 20–21, 1997).

18 Cameron and Wolfson, "Missing Transfers," p. 10.

19 Another possible objection to my approach is that the equalization program actually affects provincial tax revenue derived from numerous sources, including natural resource rents and miscellaneous fees and licenses, whereas I modeled the impact of only the sources of tax revenue captured by the SPSD/M. The answer is that equalization does not, in fact, affect those other revenues at all; rather, it adjusts provincial revenue *as if* the constituent taxes were actually equalized. It is likely, but irrelevant to the microsimulation approach, that provinces do adjust their tax rates over

time in response to the marginal incentives imposed by the equalization program; an analysis of those incentives is found in Michael Smart, "Taxation Incentives and Deadweight Loss in a System of Intergovernmental Transfers," Working Paper UT-ECIPA-MS MART-96-03 (Toronto: University of Toronto, Department of Economics and Institute for Policy Analysis, 1997).

20 Such as one finds in Sheila Block and Richard Shillington, "Incidence of Taxes in Ontario in 1991," in Allan M. Maslove, ed., *Taxation and the Distribution of Income* (Toronto: University of Toronto Press in cooperation with the Fair Tax Commission of Ontario, 1994).

21 Although, if the other taxes were increased relatively more than consumption taxes and income taxes, then the aggregate incidence would change to the extent that those other taxes differ in incidence from modeled taxes.

22 Evidence on the high private (as opposed to public) return on postsecondary education is given in Christos Constantatos and Edwin G. West, "Measuring Returns from Education, Some Neglected Factors," *Canadian Public Policy* 17 (2, 1991): 127–138.

23 The preceding analysis has presented average or effective tax and transfer rates; I have not discussed marginal rates.

24 For a detailed exposition of the model, see Michael Bordt et al., "The Social Policy Simulation Database and Model: An Integrated Tool for Tax/Transfer Policy Analysis," *Canadian Tax Journal* 38 (1, 1990): 48–65.

25 The arguments and empirical evidence on this point are given reasonably extensive treatment in Jonathan Kesselman, "Payroll Taxes and Social Security," *Canadian Public Policy* 22 (2, 1994): 162–179.

26 For a view of changes to the CPP/QPP that would lead the plan to be viewed as a savings vehicle rather than a tax/transfer program, one might refer to James E. Pesando, *From Tax Grab to Retirement Saving: Privatizing the CPP Premium Hike*, C.D. Howe Institute Commentary 93 (Toronto: C.D. Howe Institute, June 1997).

27 As one finds in Michael Wolfson et al., "Generational Accounting with Heterogeneous Populations" (paper presented to the conference "Intergenerational Equity in Canada," Statistics Canada, Ottawa, February 20–21, 1997).

28 An encyclopedic discussion of the incidence issues and matters relating to the income definition, with specific application to the microsimulation context, is found in G.C. Ruggeri, D. Van Wart, and R. Howard, *The Government as Robin Hood: Exploring the Myth* (Kingston, Ont.: Queen's University, School of Policy Studies; Caledon Institute of Social Policy, 1996).

29 Empirical evidence on tax burdens which indirectly supports this approach is found in a number of places, including, for example, G.C. Ruggeri, D. Van Wart, and R. Howard, "The Redistributional Impact of Taxation in Canada," *Canadian Tax Journal* 42 (2, 1994): 417–451, which allocates half of corporation taxes to income and half to holders of capital, and arrives at a roughly proportional result.

30 The same approach is taken in the exclusion of federal subsidies to business from the discussion in the transfers section.

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