

Who Paid the Taxes in Canada, 1951–1988?

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Ce texte mesure les changements dans l'incidence des impôts et taxes au Canada pour un certain nombre d'années entre 1951 et 1988. Il présente les premiers estimés cohérents dans le temps des effets de tous les impôts sur la distribution des revenus. Notre méthodologie permet de construire une mesure complète du revenu élargi qui inclut la première mesure ajustée pour l'inflation du revenu en capital. Ce type de mesure n'apparaît pas généralement dans une étude sur l'incidence des impôts. Les faits marquants de nos résultats sont les suivants: (1) les taux moyens d'impôt pour les 10 pour cent des familles les plus pauvres et les 2 pour cent des familles les plus riches ont baissé, alors que les taux d'imposition pour la majorité des autres familles ont augmenté; (2) alors qu'en 1951 l'incidence des impôts était régressive pour les gens à revenu faible et fortement progressive pour les gens dans la couche supérieure des revenus, la structure ressemble maintenant à un système à taux unique avec une certaine progressivité pour des familles à faible revenu et pour les 2 pour cent des familles les plus riches.

This paper measures the changes in total tax incidence in Canada for selected years from 1951 to 1988. It presents the first set of time-consistent estimates of the effect of all Canadian taxes on the distribution of income in Canada. The methodology builds up a comprehensive measure of broad income, which includes the first inflation-adjusted measure of capital income in a tax incidence study. The key findings are that over 1951–1988: (1) average tax rates for the poorest 10 per cent and the richest 2 per cent of Canadian families fell, whereas tax rates for most other families in the middle rose; (2) while in 1951 the tax incidence pattern was regressive over the low income range and highly progressive over the upper income range, it has evolved into one that resembles a flat rate tax system, with some progressivity over the lower income range and for the richest 2 per cent of Canadian families.

I Introduction

Has the tax burden on middle income Canadian families increased more or less than on high income families or the poor during the past four decades? Has the Canadian tax system as a whole become more progressive or more regressive over time?

Existing tax incidence studies cannot be

used to answer these questions. The literature contains empirical estimates of tax incidence by income groups for the total Canadian tax system for selected years,¹ but no estimates of the change in tax incidence over time. The conceptual methodologies of existing studies, while similar, are not identical; the income, consumption and tax information is for grouped data in some studies and micro data in others; and

the separate studies are not cast within a common framework for an examination over time.

Occasionally governments have provided taxpayers with tax incidence information. However, this information is always partial. It focuses on one particular tax (or a limited tax reform package), provides estimates for one level of government only, uses an incomplete measure of income, and only rarely involves comparisons over time.

Taxpayers who may have an interest in whether or not the tax system has become more or less progressive over time, consequently, have no basis on which to evaluate the proffered answers of politicians.

The objective of this paper is to analyse the broad historical patterns of tax incidence in Canada over almost four decades. We present a set of time-consistent estimates of the effect of all Canadian taxes on the distribution of income in Canada for selected years, 1951–1988. These estimates show the extent to which total tax incidence has changed over this period. In addition, they show whether the changing tax incidence pattern is primarily generated by federal, provincial or local taxes, and whether it is the result of consumption-based taxes or income-based taxes.

The estimates of tax incidence presented in this study are for 1951, 1961, 1969 and 1988. These years were chosen because the authors have previously published incidence studies for these four years. Gillespie's fiscal incidence studies for 1951, 1961 and 1969 contain some unpublished, detailed data and the distributive series for income and consumption components needed to estimate a time-consistent data base. Vermaeten, Gillespie and Vermaeten used Statistic Canada's Social Policy Simulation Database and Model to estimate total tax incidence for 1988.² Fortunately, these years are comparable because economic growth was strong and the economy was close to full employment, and the revenue mix was similar for the period surrounding each representative year.³

The paper proceeds in four stages. The next section provides a brief overview of the economy and the government sector through the 1951–1988 period; in the third section we describe our methodology for examining tax incidence through time; the fourth section presents and summarizes our findings; and in the fifth section we present our conclusions. Details regarding the derivation of empirical results are documented in a separate Appendix B (available from the authors on request).

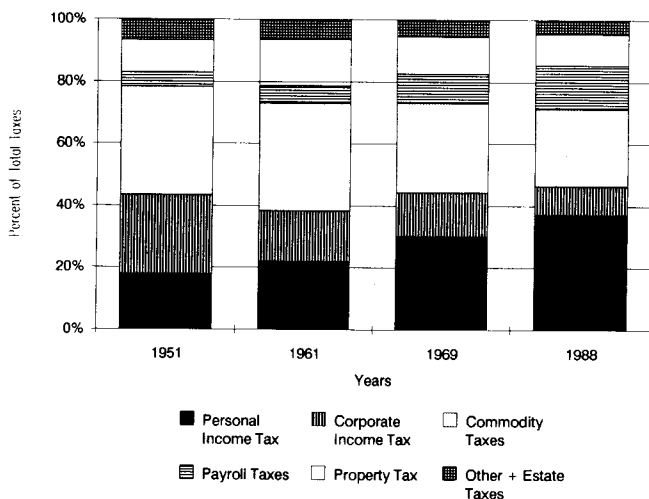
II The Tax Policy Context

This section of the paper sets the stage for the tax incidence analysis by providing a brief overview of the Canadian economy and governments' tax policies from 1951 through 1988. The information in this section is summarized in Table 1 of Appendix A.

Canadians' incomes increased as the economy grew substantially from 1951 to 1988. On a per capita basis real GNP almost tripled, from \$6,429 to \$16,799 in 1981 dollars, with the most significant increase occurring over the 1969–1978 decade.

Total government expenditures by federal, provincial and local governments grew even faster, from 24.2 per cent of national income in 1951 to 44 per cent in 1988. It was a time of major new transfer programs, from the introduction of universal Old Age Security pensions in 1952, major revisions to unemployment insurance benefits in the 1960s and 1970s, the introduction of the Canada and Quebec Pension Plans and Guaranteed Income Supplements for the elderly during the late 1960s, to the introduction of refundable Child Tax Credits in 1978. It was also a time of increased government spending on education and roads, and new expenditure programs, such as Hospital Insurance in the 1950s and Medicare in the 1960s.

Total government revenues also grew, albeit less rapidly than government spending. Tax revenues grew from 26 per cent of national income in 1951 to 35 per cent in



SOURCE: Appendix Table 1

Figure 1 Share of taxes paid by revenue source, over time, Canada

1988.⁴ This tax share was more or less constant at 26 to 25 per cent over 1951–1961, increased sharply, from 25 to 32 per cent over 1961–1969, and increased moderately from 32 to 35 per cent over the next 21 years.

This increase in tax share was accompanied by an even more dramatic change in the tax mix, as Figure 1 indicates.

The personal income tax, the most progressive of the various types of taxes, increased in importance significantly between 1951 and 1988. While in 1951 it was the third largest revenue source for governments, it had become the most important revenue raiser by 1969 and is today raising about 37 per cent of total tax revenues. This growth pattern is the outcome of major federal tax reforms and of provinces' increasing reliance on this source of revenues. The structure of the personal income tax changed significantly between 1951 and 1988, as three major tax reforms resulted in a notable reduction in marginal rates and a substantial broadening of the taxable income base.⁵

As the progressive personal income tax expanded, payroll taxes, which tend to be progressive over the low income range and regressive over the middle and high income

range, also became more important.⁶ While generating less than 5 per cent of total revenues in 1951, by 1988 they were generating 14 per cent and had become the third biggest revenue raiser. This growth reflects increasing rates for the payroll taxes that existed in 1951 (unemployment insurance and workers' compensation contributions, and hospital insurance premiums) and new payroll taxes (medicare premiums, CPP/QPP contributions, and several provincial payroll taxes⁷).

Commodity taxes, most of which are regressive throughout the distributions of income, were the most important source of government revenues in 1951, producing 35 per cent of the total. Since 1969 commodity taxes have been in second place, accounting for one-quarter of total revenues in 1988. This decline in relative importance masks considerable structural change at both the federal and provincial levels. Federal tariffs and most wartime selective excise duties and taxes were repealed or rates were reduced. Provincial retail sales taxes became much more important, as all provinces but Alberta entered the field by 1968, and continually raised rates.⁸

The burden of corporation income taxes reflects the skewed distribution of cor-

porate earnings and therefore tends to be progressive when measured against total income. Corporate income taxes dropped from second place in 1951, when they raised one-quarter of total revenues, to fifth place at just 9 per cent in 1988.⁹ In 1950 and 1951 the federal government, in order to finance the Korean war, increased corporation income tax rates substantially (at a time when the booming economy was generating high corporate profits). These tax rates were later reduced. Federal tax policies of the 1970s (special provisions for processing and manufacturing firms, accelerated depreciation, investment tax credits, etc.), as well as declining corporate profits over time, also diminished the role of this tax.¹⁰

Property taxes generated approximately the same 10 per cent share of total revenues in 1988 as in 1951. Other and estate taxes declined somewhat in significance, primarily as a result of provincial and federal repeal of succession duties and estate taxes during the late 1960s and the 1970s.

This observed change in the tax mix can be used to make tentative predictions about the pattern of total tax incidence over time in Canada. The effect of the more prominent role of personal income taxes will be to increase progressivity, whereas the effect of increased payroll taxes will be to decrease progressivity for incomes beyond the median. The diminished role of commodity taxes will tend to increase progressivity; the very significant decrease in corporate income taxes and the repeal of estate taxes will reduce progressivity over higher income groups. The net impact of these opposing tendencies is ambiguous. The various changes in tax mix have disproportionate effects at the lower and higher ends of the income scale. Consequently, the effect of the changing tax mix over time will not be a simple proportionate shift in or tilting of the pattern of tax incidence over the entire income range. What happens to progressivity and regressivity in low, middle, and high income ranges will differ.

III Methodology and Data

A tax incidence study poses the question 'Who pays the taxes?' It attempts to measure the impact of all taxes on the relative well-being of economic families throughout the income distribution.¹¹

To estimate a family's tax incidence its total income and total tax burden are measured on an annual basis.¹² Total taxes are then divided by income in order to express the tax burden as a percentage of income. These derived tax rates can be used to compare the tax burdens of families with different incomes, and to measure whether the tax system is regressive, progressive or proportional.¹³

Although this may appear straightforward, it is in fact rather complicated and raises many questions. What is income? Do we include imputed rental income of homeowners; do we include transfer payments from governments; do we include the imputed value of government services, such as health care and education? What is a tax? Should the profits of government enterprises be considered a tax? And most importantly, who pays the taxes?

The last question involves the issue of tax shifting. The question of who bears the corporation income tax, for example, is open to debate. Do the owners of corporations bear the burden of this tax through a reduction in profit income? Or are corporations able to pass this tax on to consumers through higher prices or shift the burden to their employees by lowering their wages?

An extensive literature which tries to answer these questions has developed over the years.¹⁴ Our approach to these issues follows that of our 1988 tax incidence study, save for one modification relating to an adjustment for inflation in measuring capital income, described below.

Measuring Economic Well-Being

Income can be measured in numerous ways and the various tax incidence studies which have been published over the years have used different income concepts.¹⁵

The money income reported by families on their individual income tax forms each spring provides one measure of income. But this narrow income measure does not fully reflect a family's economic well being and does not accurately capture the disparity in economic capacity of different families. A more appropriate measure of the economic capacity of families is provided by a broader Haig-Simons income concept (Haig, 1927; Simons, 1938) which includes non-reported money income, for example inheritances and gifts and realized capital gains on principal residences, as well as non-money income such as imputed rents on owner-occupied residences and unrealized capital gains on shares. The most comprehensive income base that could be used would include the imputed value of services families receive from government, such as health care, education and roads, and income earned in the underground economy. However, the total value and the distribution of these last two items are extremely difficult to measure. A trade-off therefore exists between comprehensiveness and accuracy in income measurement.

Of the three commonly used measures of income used in tax incidence studies – pre-fisc, broad, and post-fisc income – we use the broad income concept for this paper.¹⁶ Broad income includes market income (reported factor income from employment and from investment of capital), various additional sources of non-reported money income and non-money income (such as, capital gains on principal residences, non-taxed earnings of retirement savings plans, employer-provided benefits and gifts and inheritances), several adjustments to income for model consistency (such as backward-shifted payroll taxes) plus government transfer payments received by families (see Appendix Table 3 for details). Broad income is more comprehensive than pre-fisc income because it includes transfer payments whereas pre-fisc does not. However, it is less comprehensive than post-fisc income because it does not include the imputed value of services families receive

from government.

Other tax incidence studies – whether they have used a pre-fisc, broad, or post-fisc income measure – have included some additional sources of non-reported money income and non-money income in the income concept, but the specific income sources which have been included have varied from study to study. We have attempted to be as comprehensive as possible in including those additions to income which can be accurately measured. The values for the different income components are provided in Appendix Table 3.¹⁷ All additions to income for 1951, 1961 and 1969 have been re-estimated from the reference studies. Those studies included only some of the additions to income included here; and new data, which were not initially available, have made it possible to produce more accurate estimates.

We use broad income in this study rather than pre-fisc income or post-fisc income because we believe it to be of greater interest to both taxpayers and policy-makers than the other two. Families consider the transfer payments they receive from government as part of their total income whereas they do not generally consider the value of services received from governments as income. In analysing the impact of proposed tax changes, policy-makers are usually interested in the after-tax, after-transfer economic position of families. This is so because most redistribution of income by government is accomplished through an integrated tax/transfer system. In evaluating the fairness of the tax system or in proposing tax changes, policy-makers take into account both components of this system – taxes and transfers. Government services and the distribution of the benefits of those services among families who receive them – a distribution that is extremely difficult to measure – are, on the other hand, generally not taken into account in evaluating tax policy.

The above discussion of broad income as an appropriate measure of economic well-being draws upon the widely accepted Haig-

Simons definition of comprehensive income as the sum of current consumption plus net additions to wealth. In an economy with zero inflation, nominal income, comprehensively defined, satisfies the definition, can be used as a benchmark goal for tax reform proposals, and can be used in measuring tax incidence.

In an economy with inflation, income has to be defined in real terms. Nominal gains in the return to assets which just offset the depreciation of the asset value owing to inflation, are illusory gains.¹⁸ They merely compensate investors for the erosion of the real value of their principal. They do not involve an increase in real wealth and are not income. Such nominal gains do not constitute a part of the comprehensive Haig-Simons definition of income, do not increase a family's command over goods and services, and should not be included in the income measure used in a tax incidence study. Nevertheless, all tax incidence studies to date have used nominal income.

The use of an inflation adjusted income concept becomes especially critical in a study of tax incidence over time. The rate of inflation varied considerably between 1951 and 1988. Without an inflation adjustment, changes in the pattern of tax incidence over time could not have been accurately measured. Measurement of capital income in nominal terms distorts not only changes in the total tax burden as a percentage of income from year to year, it also distorts the pattern of tax incidence across income groups, because a greater proportion of the income of high income families than of low income families consists of capital income. Such a measure, therefore, overestimates the income of high income families more than that of low income families.

This study thus adjusts nominal interest, dividend, and capital gains income by the portion of these types of income attributable to inflation.¹⁹ As a result, the tax incidence results presented here for 1988 differ from those reported in Vermaeten, Gillespie and Vermaeten (1994). The nom-

inal income measure used previously may accord more closely with what families generally count as income, and it is closer to the income concept used in Statistics Canada sources such as personal income in the *System of National Accounts (SNA)* or total money income in the *Survey of Consumer Finances (SCF)*.²⁰ However, the real income measure used in the present study conforms more strictly with a Haig-Simons comprehensive definition of income, and reflects more accurately the relative economic capacity of families.

Taxes and Tax Shifting

This study examines the effect of total taxes on the distribution of income in Canada.²¹ Tax incidence analysis takes place within a broader conceptual framework for a given economy. In the case of Canada this involves a federal system of governments in a small open economy, with considerable mobility of capital, some mobility of consumer outlays and immobile labour and land. Tax incidence entails deriving the effects on relative product prices (the uses side of a household's income, whether it be uses among the many goods and services or uses between total consumption and total saving) and relative factor prices (the sources side of a household's income) within a general equilibrium framework.

Of the three different tax shifting models used to estimate tax incidence in our 1988 study – a standard case, a progressive case, and a regressive case model – we focus primary attention on the standard case results in this study. Summary tax incidence estimates using the progressive and regressive tax shifting models are also presented in order to provide a sensitivity analysis of the results of the standard case model.

The standard case shifting model is developed for an economy as described above, where the tax/expenditure mix in the rest of the world is taken as given. Then, for any new tax on a mobile revenue source (factor income or consumer outlay), the share of the tax up to the average or common rate with the rest of the world is borne

by non-resident factor owners or consumers (i.e. it is as if it were exported). The share of the tax reflecting the differential above the average or common rate with the rest of the world is borne by the least mobile domestic factor owners or consumer outlays.

The tax shifting assumptions that can be developed from this model and from available empirical research are as follows. The personal income tax is borne by the taxpayer; the corporation income tax is borne by the owners of corporate capital; and commodity taxes are borne by consumers, except for the share of such taxes on government purchases which is borne by personal income taxpayers and the share on purchases of capital goods and exports, the common portion of which is borne by consumers and the differential portion of which is borne by labour. Payroll taxes (both employee and employer contributions) are borne by employees; property taxes are borne partly by owners (the portion on land) and partly by users (the portion on residential structures by homeowners and renters, and the portion on commercial structures by consumers); estate taxes are borne by recipients of estates; natural resource revenues are borne partly by owners (rental payments) and partly by consumers (royalty payments); and miscellaneous fees and taxes are borne by consumers.

These standard case shifting assumptions represent our interpretation of much of the theoretical literature on tax incidence and of empirical tax incidence work.²² Moreover, we believe they reflect how most governments view the incidence of particular taxes when evaluating tax policy or justifying tax changes. For readers who disagree with our assessment of the tax incidence literature, progressive and regressive case results are provided in Table 1. These alternative shifting models reflect conflicting views in the debates over the incidence of the corporation income tax, payroll taxes, property taxes and commodity taxes on capital goods and exports.

Our progressive case differs from the standard case in that commodity taxes falling on the differential share of purchases of capital goods and exports, the employer portion of payroll taxes, property taxes on structures, and taxes on royalties are all borne by owners. Our regressive case differs from the standard case in that half of corporate income taxes, all commodity taxes, and the employer portion of payroll taxes are borne by consumers.

Modelling Income and Taxes Over Time

In order to provide an accurate picture of changes in tax incidence over time, we have made the tax incidence estimates for the four reference years as consistent as possible. We have included the same components in the income base for each year and have estimated them, to the extent that the available data allow, using the same methodology. We have also used the same definition of what constitutes a tax and the same tax shifting assumptions for each year.

In estimating tax incidence over time, conceptual and methodological difficulties arise in identifying and comparing income groups in different years. What, for example, is the proper comparison income group in 1969 for the 1951 \$3,000–4,000 income group, given the substantial increases in both real incomes and prices over this period? A comparison with the \$4,265–5,687 income group, which results from grossing up the 1951 income bracket by a measure of inflation (changes in the Consumer Price Index) is not particularly meaningful because there were also substantial increases in real incomes. A comparison with the \$6,719–8,959 income group, arrived at by grossing up the 1951 income bracket by the increase in average nominal per capita income, is more meaningful because it accounts for both the increase in real incomes and prices. However, no published data are available for either method of grossing up income groups. Studies using aggregate source data have to rely on published data for income, consumption, wealth and taxes

which are only available for some money income groupings, and unusual groupings such as the \$6719–8959 calculated above are not among them.

Ideally one wants distributions of data for all of the years being studied by income deciles.²³ Income decile comparisons take into account both inflation and real income growth and thus provide an appealing framework within which to analyse changes in the pattern of tax incidence over time. Again, however, no comprehensive tax, income, consumption, and wealth data by income deciles exist.

Our 1988 tax incidence study used Statistics Canada's Social Policy Simulation Database and Model (SPSD/M).²⁴ The SPSPD/M uses a microdatabase (based on micro survey data reconciled with various aggregate control totals) to represent the incomes, taxes, consumption patterns, and (to some extent) wealth of individuals, families, and households. With the SPSPD/M, output can easily be generated by income quantiles, or any other grouping in which the analyst is interested. Unfortunately, the earliest year for which the SPSPD/M is available is 1984; no integrated microdatabase exists for 1951, 1961 or 1969.²⁵

To make comparisons by income deciles possible, we have therefore, using the SPSPD/M as a tool, modelled micro distributions of the required income, tax, consumption, and wealth data for 1951, 1961, and 1969. The modelled micro distributions enable us to order families by their level of income and thus make comparisons over time using income deciles.²⁶ In presenting our results we have grouped families by broad income deciles with the top decile subdivided further to provide more detailed information on very high income families.

The use of simulated micro distributions solves another major problem which has impeded all previous tax incidence studies based on aggregate source data.²⁷ The 'bracket jumper' problem arises as follows. Suppose that total money income recorded in the aggregate data for the \$6,000–7,000

income group in 1969 is \$3.8 billion. In order to measure the economic well-being of families in this group it is appropriate to add \$0.5 billion in inheritance income. When the inheritance income is added, some families jump from the \$6,000–7,000 income group to a higher income group. In addition, with the inclusion of inheritances in income, the income concept used in grouping families changes.

Methodological consistency requires that families should be regrouped by the broad income concept which includes inheritances. Previous studies using aggregate data have not been able to do this. Families had to stay put in the narrowly defined money income bracket and sometimes, as the additions to income were made, the average family broad income in an income group actually exceeded the upper bracket limit. This problem reduced the accuracy of the tax incidence estimates.

By simulating income distributions at the micro level for 1951, 1961, and 1969, we eliminate the 'bracket jumper' problem. When additional sources of income are included in the income concept, this new income is distributed individually to each family. Since the income of each family is represented separately in the microdata, families can easily be grouped according to the new broad income concept.

IV Tax Incidence Results, Canada, 1951–1988

When the taxes borne by Canadian families are expressed as a per cent of the broad incomes of these families the resulting effective tax rates provide a measure of tax incidence. Both the income base and the taxes paid have a role to play in determining the results.

The Changing Income Composition Over Time

Figure 2a documents the changing composition of broad income over time. Market income (most of which is taxed) declined in importance, transfer payments increased

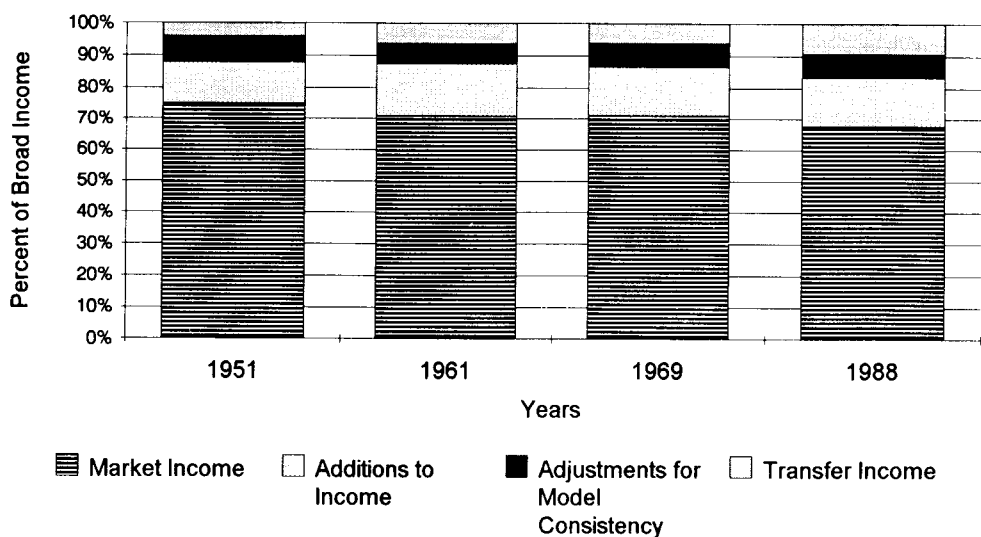
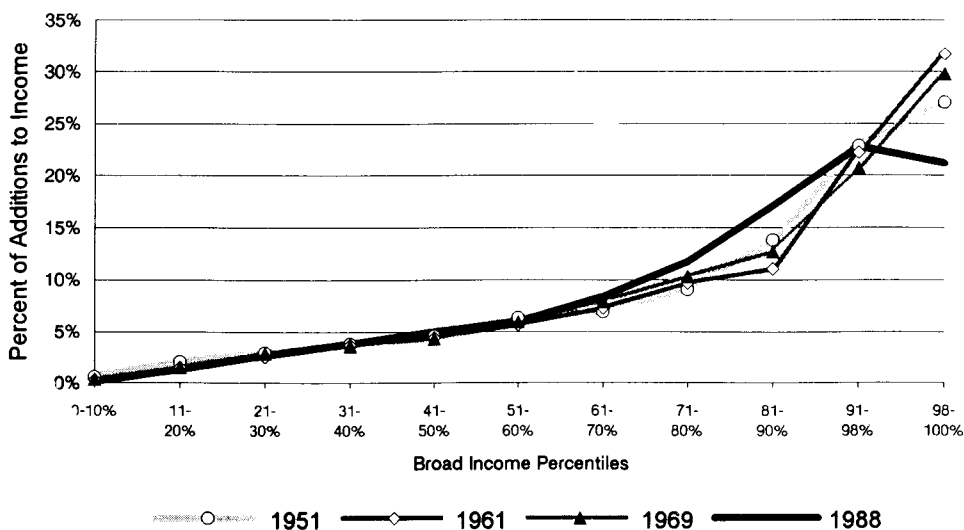


Figure 2A Components of broad income, over time, Canada



SOURCE: Appendix B

Figure 2B Distribution of additions to income by broad income percentile, 1951, 1961, 1969, 1988

in importance and total money income (market income plus transfers) declined in relative importance. The additions and adjustments to income, all of which are not taxed or lightly taxed, increased in relative significance. The increased relative importance of total additions to income is most noticeable over 1951 to 1961.

The changing income composition has

several interesting consequences. First, over time the average tax rate (for all families) based on total money income has increased more than the measure based on broad income, which is the more appropriate measure of economic well-being. Money income may be what most families count as their income, and if they do they will have overestimated their tax burden

and the increase in their average tax rate through time.

Second, the pattern of tax rates based on money income is more progressive than the pattern of tax rates based on broad income. This occurs because most of the additions to income are more concentrated among middle and upper income families than among low income families. This concentration of the total additions to income is illustrated in Figure 2b.

Since 1961, higher income families have received an increasing share of these total non-taxed additions to income (albeit, the share for the richest 2 per cent of families fell between 1969 and 1988). The fact that upper income families (those in the 71st to 98th percentile) have been receiving more of their comprehensive broad income from non-taxed sources means that their effective tax rates will have declined over time unless there were offsetting increases in statutory tax rates. In other words, the changing income composition has tended to decrease the progressivity of the total tax system over time.

Changing Average Tax Rates Over 40 Years

As noted in section II of the paper, total government spending as a share of the national economy grew significantly over time, and this growth in spending was financed by a substantial growth in tax revenues.

The average tax rate based on a comprehensive measure of economic well-being increased by 10 percentage points compared with a much higher 14 point increase for the measure based on money income, illustrating the first point mentioned above. Taxes borne by Canadians as a share of broad income, was constant at 27 per cent over 1951–1961, increased sharply to 34 per cent over 1961–1969, and grew more slowly to 37 per cent over the next two decades. In comparison, the average tax rate based on money income increased substantially more, from 33 to 47 per cent over the same time period.²⁸ The slow growth in the average tax rate over the past 20 years is worth

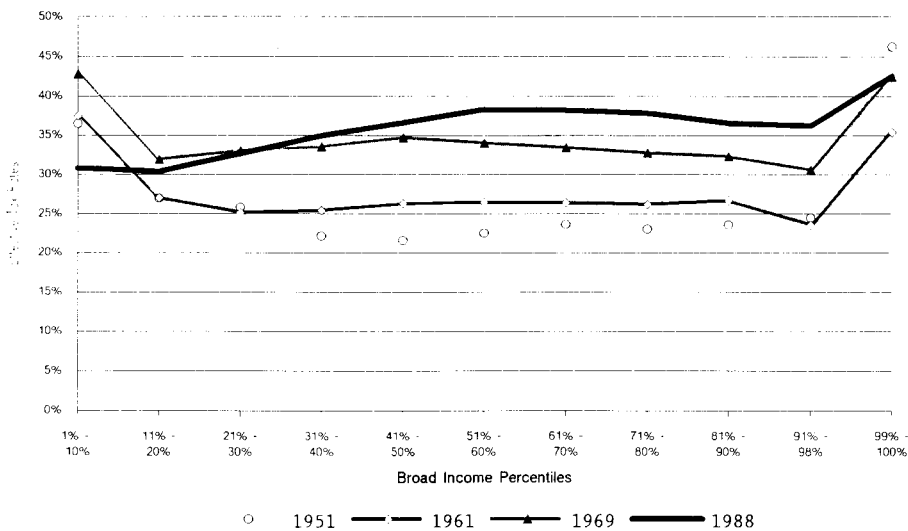
noting, since it casts some doubt on alarmists' fears and taxpayers' concerns that tax burdens have increased dramatically.

The growth in total government spending as a share of the national economy over the past 40 years is the result of the underlying growth patterns of the federal, provincial and local governments; and these spending growth patterns were very different for the three levels of government. The federal and local spending shares were virtually constant, whereas the provincial spending share almost tripled. These differential spending growth rates by level of government are reflected in the very different growth rates in tax shares (average tax rates) by level of government (see Appendix Table 4). Therefore tax policy has been driven by two forces: the need to raise more revenues and increase the average tax rate, primarily at the provincial level; and the choice of tax structure that increases some families' tax rates by more than the average and some by less (or even decreasing some families' tax rates).

Has Tax Incidence in Canada Changed Over 40 Years?

Figure 3 illustrates, for the standard case shifting assumptions, the pattern of total tax incidence for Canadian economic families grouped by broad income deciles for each of the four years. While the average tax rate increased by 10 percentage points from 1951–1988, some income decile groups saw significant reductions in tax rates, while most saw increases greater than the average.

From 1951 to 1988, the big gainers were the poor and the rich, with the gain to the poor occurring since 1969 and the gain to the rich happening by 1961. For the poorest 10 per cent of families, tax rates fell from about 37 to 31 per cent; this encompasses an increase in tax rates over 1951–1969, and a substantial decrease since then. For the richest 2 per cent, average tax rates fell from about 46 to 42 per cent; this encompasses a big fall in tax rates over 1951–1961, and an increase during the 1960s, after



SOURCE: Appendix Table 4

Figure 3 Effective tax rates, total government, by broad income percentile group, over time, Canada

which they were constant. Lower income families in the second and third deciles also gained, since their tax rates increased by less than the average.

Middle and upper income families, on the other hand, faced the biggest relative tax increases. Tax rates grew for most families with incomes in the 31–98 percentile groups by more than the average, from about 22–23 per cent in 1951 to 36–37 per cent in 1988.

These shifts in relative tax burdens resulted in a changed pattern of total tax incidence in Canada over the 1951–1988 period. Tax incidence became less regressive over the income range that includes the poorest 30 per cent of Canadian families, and less progressive for the range that includes the richest 2 per cent of families. The more-or-less proportional pattern of tax incidence for families over the middle and upper income range remained unchanged, with the level of tax rates increasing over time.

What in 1951 was a ‘bowl’ shaped tax pattern, by 1988 had been transformed into a tax incidence pattern that was proportional for the poorest 20 per cent of families, moderately progressive for the next 30 per cent,

then proportional for about 48 per cent, with some progressivity for the richest 2 per cent. What stands out is the finding that there is absolutely no progressivity in total tax incidence for families with incomes that range from the median to the 98th percentile. For middle and middle-upper income families the flat tax has arrived! For the richest families tax progressivity has declined since 1951, but remained constant since 1969.

The tax incidence rates for the standard case shifting assumptions, along with the progressive and regressive case shifting assumptions are provided in Table 1.²⁹ As expected, the tax incidence patterns for the two alternative cases bracket the findings for the standard case and are very similar throughout the distribution of income, except for the richest families.

Have Governments Altered Their Taxing Behaviour Over Time?

For each taxpaying family it is total taxes paid and total tax incidence that matters, regardless of whether it is the federal, provincial or local government that is extracting the taxes. However, if tax incidence has changed over time, there may be an inter-

Table 1
Effective tax rates, all taxes, under alternative shifting assumptions, by income percentile group, Canada, 1951, 1961, 1969, 1988

Percentile	1%	11%	21%	31%	41%	51%	61%	71%	81%	91%	99%	All
	-	-	-	-	-	-	-	-	-	-	-	-
	10%	20%	30%	40%	50%	60%	70%	80%	90%	98%	100%	
Standard case												
Income groups												
1951												
less than \$961		\$962-1,721	\$1,722-2,741	\$2,472-3,112	\$3,113-3,592	\$3,593-4,238	\$4,239-4,872	\$4,873-5,973	\$5,974-8,036	\$8,037-14,284	\$14,285 & above	
1961		\$1,186-2,343	\$2,344-3,479	\$3,480-4,374	\$4,375-5,202	\$5,203-5,989	\$5,990-6,946	\$6,947-8,239	\$8,240-10,794	\$10,795-20,318	\$20,319 & above	
1969		\$2,282-4,039	\$4,040-5,723	\$5,724-7,350	\$7,351-8,905	\$8,906-10,587	\$10,588-12,525	\$12,526-14,995	\$14,996-19,688	\$19,689-34,186	\$34,187 & above	
1988		\$10,524-16,628	\$16,629-23,102	\$23,103-30,419	\$30,420-38,184	\$38,185-47,413	\$47,414-8,404	\$58,405-73,223	\$73,224-97,217	\$97,218-174,851	\$174,852 & above	
Standard case												
Tax rates												
1951	36.5	26.9	25.8	22.1	21.6	22.5	23.6	23.0	23.5	24.5	46.2	26.6
1961	37.5	27.0	25.1	25.4	26.3	26.4	26.4	26.2	26.7	23.6	35.4	27.3
1969	42.9	31.9	33.0	33.5	34.7	34.1	33.4	32.8	32.3	30.6	42.4	34.1
1988	30.8	30.4	32.6	34.9	36.6	38.3	38.2	37.8	36.5	36.2	42.5	37.2
Progressive case												
Tax rates												
1951	28.7	21.7	21.7	17.9	17.4	19.4	19.6	19.9	21.3	23.9	52.3	25.3
1961	30.3	21.9	20.2	20.3	21.1	21.9	22.8	23.0	24.3	23.4	41.2	25.7
1969	32.0	25.7	27.1	27.9	28.9	28.8	28.6	28.6	29.0	30.7	50.2	32.1
1988	21.3	24.0	27.1	29.5	31.3	32.9	33.4	33.2	33.1	34.3	51.3	35.1
Regressive case												
Tax rates												
1951	47.6	32.4	30.4	25.9	24.7	25.7	26.4	25.3	26.1	25.9	39.9	28.1
1961	45.4	31.3	28.1	27.8	28.4	28.5	29.0	28.6	29.0	24.8	31.7	28.6
1969	51.7	36.9	36.8	36.8	37.5	36.9	35.9	35.1	34.5	32.1	39.6	35.9
1988	42.1	38.5	39.3	39.7	40.5	41.0	40.6	39.6	37.8	37.4	41.3	39.4

SOURCE: Appendix B.

Effective Tax Rates, By Level of Government, Over Time, Canada

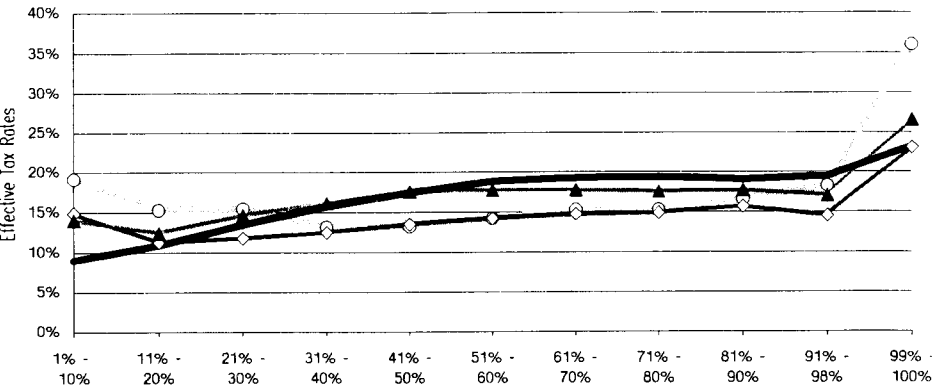


Figure 4 - Federal Government

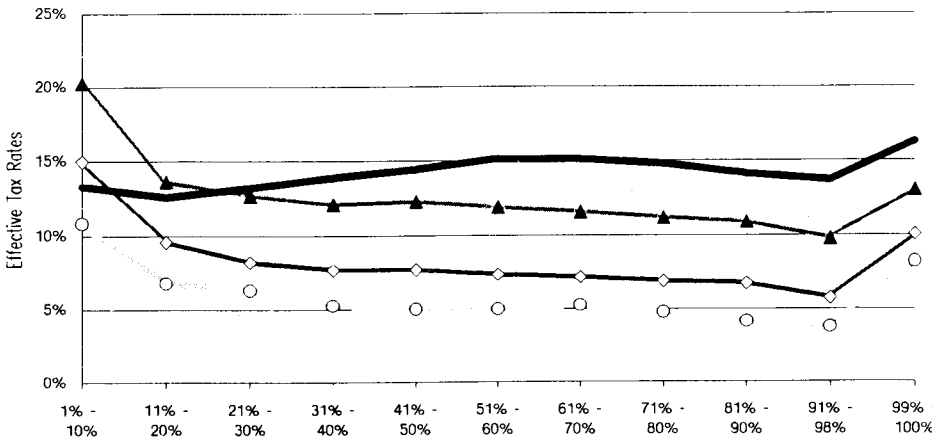


Figure 5 - Provincial Governments

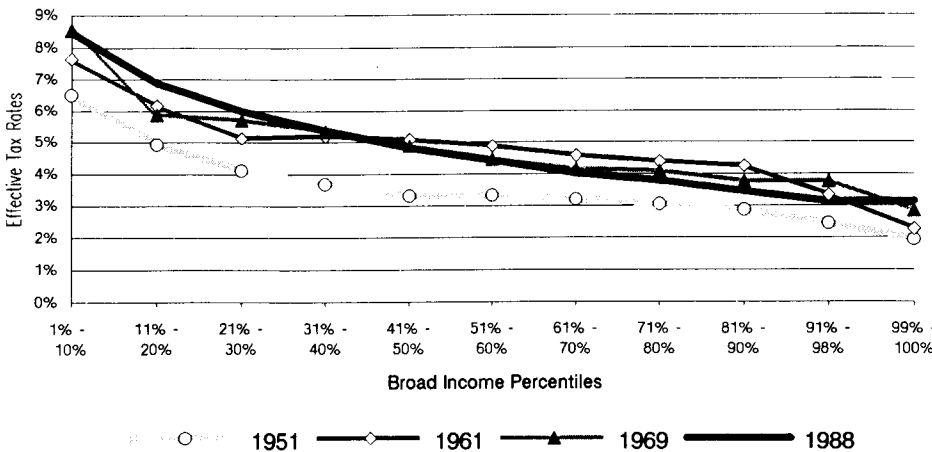


Figure 6 - Local Governments

Source: Appendix Table 4

est in knowing which level of government is primarily responsible for the change. Have governments altered their taxing behaviour over time?

Federal and provincial governments have changed significantly, while local governments have changed only modestly.

The changes over time at the federal level closely resemble those of the total tax incidence pattern described above (this comes as no surprise, since federal revenues consistently accounted for the largest share of total taxes paid). The tax incidence has become considerably less regressive for the poorest 30 per cent of families and less progressive for the richest 2 per cent of families, with the average tax rates for those in the middle increasing slightly. The average federal tax rate remained virtually constant at 18 per cent over the 1951–1988 period.³⁰

Figure 4 illustrates that by 1988 the federal tax incidence pattern was progressive up to the median income, proportional for most families with higher incomes, and mildly progressive for the very rich. The reduction in regressivity for the poor is consistent with a federal tax policy that placed increasing emphasis on the redistributive function.

Of all three levels of government, the most significant changes result from the substantial increase in the share of provincial spending in the economy, which was accompanied by an increasing share of provincial taxes. The average provincial tax rate increased from 5.3 to 14.5 per cent. While average rates increased significantly, provincial tax incidence remained somewhat more constant. For the poorest 30 per cent, the system became less regressive, while it became somewhat less progressive for the richest 2 per cent. The biggest change is the substantial increase in the virtually proportional tax pattern for most families in the middle (see Figure 5).

The resultant provincial tax incidence pattern in 1988 is more or less proportional, with a hint of progression for the very rich. The reduction in regressivity for the poor

in part reflects the increasing importance of the personal income tax as a source of provincial revenue (a base, which for all provinces but Quebec, is determined by the federal government). The fact that the provincial changes in incidence were somewhat more moderate than changes at the federal level could be explained by the larger role played by the more regressive commodity taxes at the provincial level (albeit, commodity taxes decreased in relative importance over the period examined).

Figure 6 indicates that the local tax incidence pattern – regressive throughout the income distribution – has been more stable over time than tax incidence at the other two levels of government. Nevertheless, the overall pattern not only shows an approximate 25 per cent increase in the average rates of local governments, (during the 1950s the average tax rate rose from 3–4%, after which it remained steady) but also a slight, but definite increase in regressivity.

Has the Incidence Pattern of Different Taxes Changed Over Time?

The Canadian tax system comprises many types of taxes which can be analytically grouped into income-based and consumption-based. The disaggregation of total tax incidence by each of these taxes provides further insight into how the policy decisions of federal, provincial and local governments have contributed to the evolving total tax incidence pattern over time.

Figures 7–9 illustrate that for the income-based taxes, the personal income tax has become more progressive, the corporation income tax has become less progressive and payroll taxes have become more progressive up to median family income.

The increasing importance of the personal income tax and various base-broadening, rate-reducing tax reforms have contributed to the changing tax incidence patterns noted above. The increasing tax take of the personal income tax not only explains, in part, the higher overall tax rates, but also explains the modest increase in progressivity (decrease in regressivity) for

Effective Tax Rates, By Tax Source, Over Time, Canada

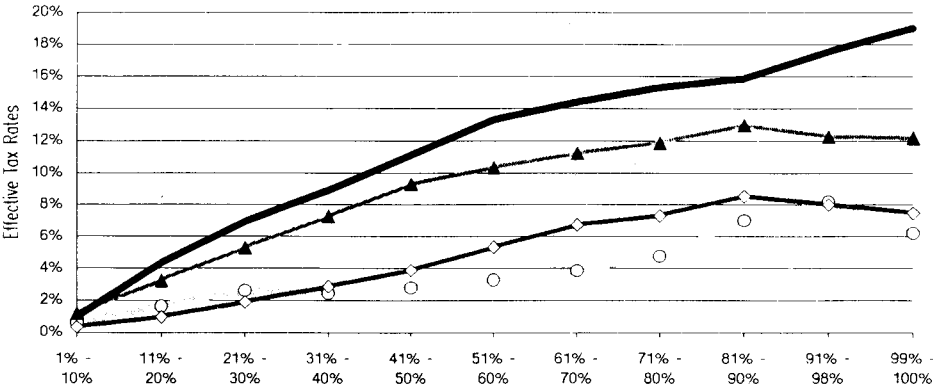


Figure 7 - Personal Income Tax

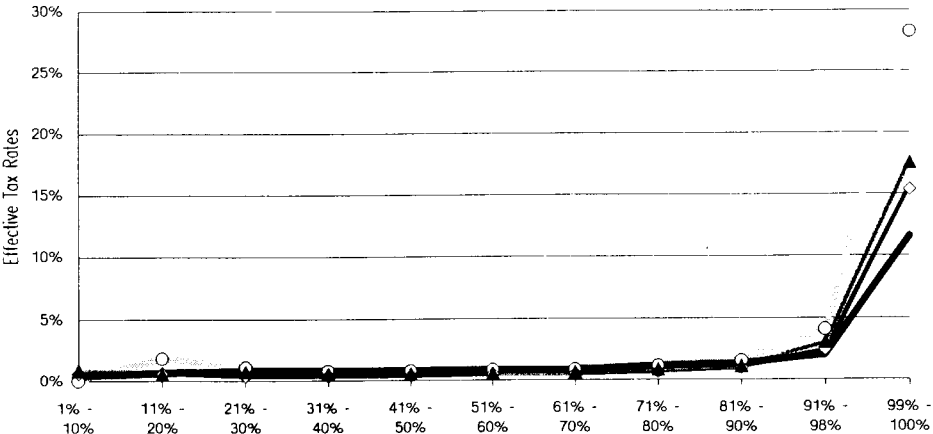


Figure 8 - Corporate Income Tax

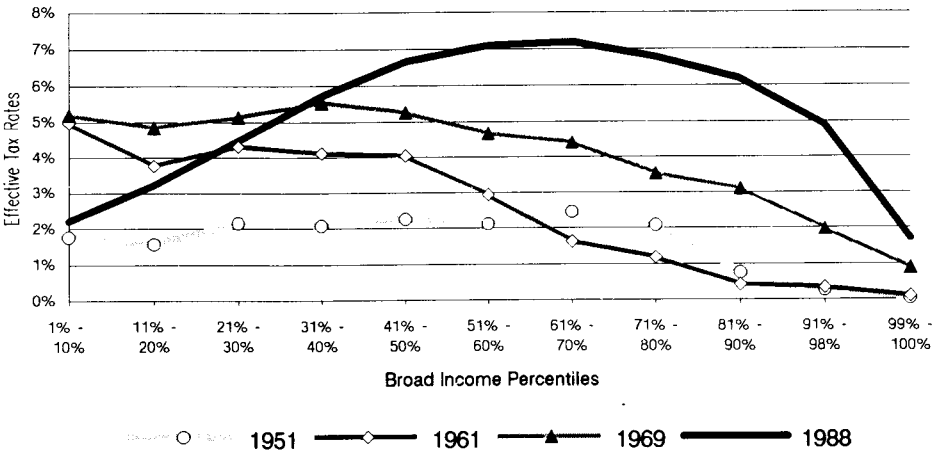


Figure 9 - Payroll Taxes

Source: Appendix Table 4

Effective Tax Rates, By Tax Source, Over Time, Canada

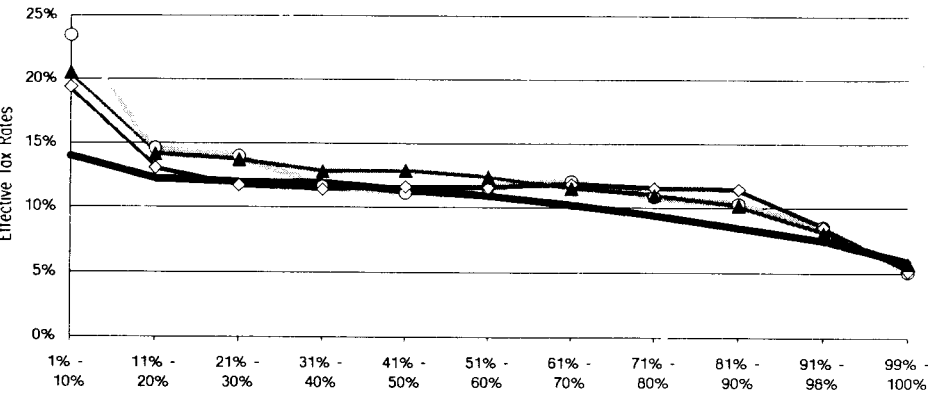


Figure 10 - Commodity Taxes

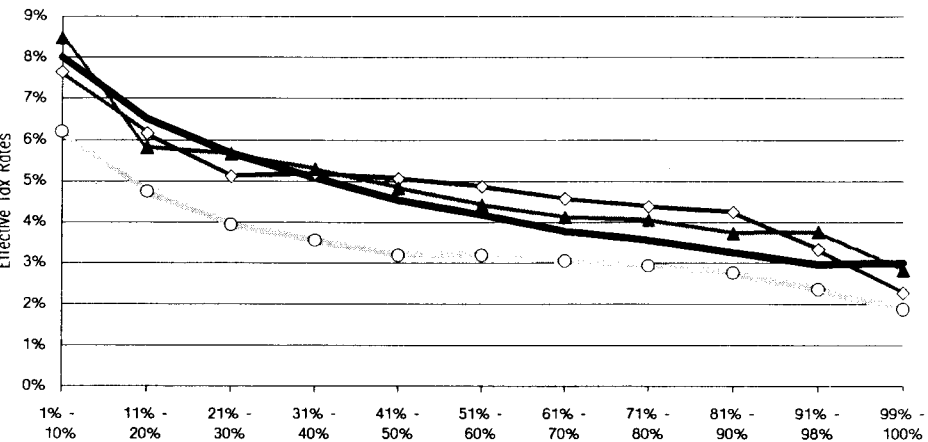


Figure 11 - Property Taxes

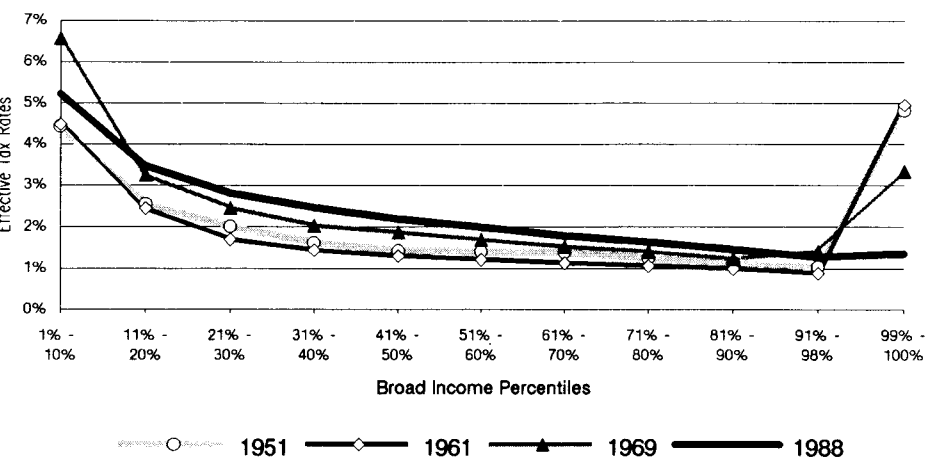


Figure 12 - Other and Estate Taxes

Source: Appendix Table 4

low income families at the federal level.

The significant decrease in the importance of the corporate income tax over time has reduced the progressivity of this tax and contributed to the reduction in progressivity of total tax incidence over time, particularly for the richest Canadian families. This changing pattern of corporate tax incidence contradicts the claims by many owners of capital that their tax burden has increased.

Payroll taxes have become increasingly important (the average tax rate rose from 1.3 to 5.4%). A changing tax incidence pattern results in an inverted U shape by 1988 – incidence rises, is more or less proportional and then declines. The increasing importance and tax incidence pattern of this tax probably contribute significantly towards explaining the findings that lower-middle income families experienced the greatest increase in effective tax rates, while the poorest and richest families were spared by the lower and upper thresholds often used in these taxes.

The consumption-based tax incidence results are provided in Figures 10–12. Commodity taxes became less regressive for lower income families over time, and property taxes became slightly more regressive.

Commodity taxes have decreased in importance and have become less regressive (sales tax credits in several provinces and the federal manufacturers' sales tax credit have been deducted from the family's taxes paid) for the poorest 30 per cent of families. The decrease in sales and excise tax regressivity for lower income families contributes most to the decline in regressivity for the total tax system over time, noted earlier.³¹

The role of property taxes varied over 1951–1988 (the average tax rate rose from 2.9 to 4.2% over 1951–1961, and then declined to 3.8% by 1988). Property tax incidence became slightly more regressive throughout the period, with some changes in the levels of tax incidence rates (property tax credits in several provinces are deducted from the family's taxes paid).

Estate taxes have been grouped with

other taxes for ease of presentation, and their repeal in the late 1960s contributes to the decline in progressivity over the top 10 and especially the richest 2 per cent of families. The estate taxes join with the corporate income taxes as providing the source for the decrease in progressivity of the tax system for the richest Canadian families.

V Conclusions

The major objective of this paper has been to determine whether the broad historical pattern of tax incidence in Canada has changed over almost 40 years. The major conclusions are as follows.

First, the average tax rate for all Canadian families combined increased, but not as significantly as has often been suggested. From 1951 to 1969, average tax rates grew from 27 per cent to 34 per cent. During the next 20 years, however, average tax rates only increased an additional three percentage points to 37 per cent by 1988.

Second, the average tax burden for the poorest 10 per cent of families and the richest 2 per cent of families fell over time – with the gain to the poor occurring between 1969 and 1988 and the big gain to the rich accruing between 1951 and 1961. The average tax burdens for families with incomes in the 41–90 percentile groups increased by about 13–15 percentage points. This finding that low as well as very high income families benefited most from tax policy changes of the 1950s through the 1980s, whereas families in the middle and middle-upper income ranges financed those changes, may provide part of the explanation for the increased discontent of the middle class.

Behind this changing total tax incidence pattern is the following.

- Federal total tax incidence has become more progressive throughout the income scale, provincial tax incidence has become virtually proportional and local tax incidence has become somewhat more regressive, over time.
- The personal income tax has emerged as both the most important revenue raiser

and the preeminent contributor of progressivity to the Canadian tax system.

- The corporation income tax has virtually withered away, and this diminution, coupled with the repeal of estate taxes, has reduced progressivity for the richest Canadian families.
- The decreasing relative importance of sales and excise taxes in the tax mix has contributed to the reduction in regressivity for lower income Canadian families.
- The increasing relative importance of payroll taxes in the tax mix has provided some progressivity for lower income families and some regressivity for higher income families.

Finally, while in 1951 the tax incidence pattern was regressive over the low income range and highly progressive over the upper income range, it has evolved into one that, from the median income on, resembles a flat rate tax system, with some progressivity for the richest Canadian families.

These findings on the incidence of taxes answer the question, 'who paid the taxes in Canada?' and have important implications for tax policy in the 1990s. While policy-makers are often guided by the net redistributive effect of the tax-transfer-government expenditure system in developing budgetary policies, our tax policy recommendations focus exclusively on tax incidence and issues of horizontal and vertical tax equity. We plan to examine and estimate the redistributive impact of government taxes, transfers and expenditures on goods and services, in a net fiscal incidence framework as part of our future research agenda.

Our tax incidence results indicate that average tax rates have not increased as dramatically over the last 20 years as many people have come to believe, or at least not as much as we expected. There may be some room for governments to increase tax revenues, as well as to cut spending, in order to reduce their deficits.³²

More importantly, our results indicate

that there is scope for increasing horizontal and vertical equity of the tax system. This improvement in the fairness of the tax system could come in the form of base-broadening or other reforms.

The comprehensive measure of broad income includes estimates for numerous sources of income which are not now taxed or are taxed lightly (i.e. inheritances and gifts, capital gains on principal residences, employer-provided benefits, imputed rents, etc.). These non-taxed sources of income have grown over time, and serve to reduce both the horizontal and vertical equity dimensions of a fair tax system.

Base broadening measures would include some of these sources in the income tax base, and this tax reform, with the existing set of tax rates, would increase revenues for deficit-reducing governments. In addition, it would reduce the large horizontal inequality that can occur when families receive identical total incomes but the components of income are different, as well as tilting the existing flat rate tax system in the direction of greater progressivity. The inclusion of lifetime capital gains from principal residences (possibly in excess of some threshold level) and some of the non-taxed earnings of registered pension plans and registered retirement savings plans in income and the reintroduction of estate and inheritance taxes could contribute significantly to providing some progressivity for middle-upper and upper income families and to restoring an earlier degree of progressivity for the richest Canadian families.

As well as base broadening, other reforms could be implemented to improve the equity of the total tax system. The sales, excise and property taxes (even after the refundable credits have been allowed for) are regressive, offsetting the progressivity of the personal income tax in the total tax system. Reducing reliance on these regressive taxes, or alternatively, increasing refundable sales and property tax credits could substantially enhance the progressivity of the total tax system.

The major payroll taxes (UI and CPP/

QPP contributions), with upper income limits for contribution rates, are regressive for upper and very high income families. These limits could be removed, thereby converting this regressive tax incidence pattern into a proportional rate for these families.

In evaluating the options for increasing horizontal and vertical equity of the tax system, consideration should always be given to the tax incidence and scope for shifting each type of tax. For this reason, we do not advocate increases in corporate income tax rates, since Canadian and US corporate rates are already comparable, and such increases, in a global economy with mobile capital, would only be shifted to labour or consumers.

As federal, provincial and local politicians grapple with revenue requirements and reforming taxes over the next few years, we hope that they will keep in mind the complete tax incidence picture in Canada.

Notes

- * The views expressed in this paper are solely the responsibility of the authors and do not reflect the views of either Carleton University or the Department of Finance. An earlier version of this paper was presented at the 28th annual meeting of the Canadian Economics Association, June 10–13, 1994, University of Calgary, Calgary. The authors are grateful to Tracey Snodden, Frances Woolley, Stan Winer and several anonymous referees for helpful suggestions on earlier drafts of the paper. The analysis is based on Statistics Canada's Social Policy Simulation Database and Model. The assumptions and calculations underlying the results were prepared by the authors and the interpretation of these data is entirely theirs.
- 1 See, for example, Gillespie (1980a) and Gillespie and Wurts (1979) for 1951, Goffman (1962) for 1957, Gillespie (1966) for 1961, Gillespie (1980b; 1980c) and Maslove (1973) for 1969, Dodge (1975) for 1970, Whalley (1984) for 1972, Ruggeri, van Wart and Howard (1994) for 1986 and Vermaeten, Gillespie and Vermaeten (1994) for 1988. The theoretical basis for the empirical estimates presented here is found in Vermaeten, Gillespie and Vermaeten (1994).
- 2 While ideally we would have liked to estimate total tax incidence for a more recent year, the latest year for which Statistics Canada's SPSD/M micro-

database exists is 1988. Given the stability in the underlying distribution of money income (Statistics Canada, 1993) and the few substantive changes in the tax structure since then (the exception being the substitution of the GST for the MST in 1991), the general pattern of these findings is not likely to be much different today.

It would also be useful to have estimates for a year in the late 1970s, but no tax incidence studies exist for those years. The gap between Whalley's estimates for 1972 and the Ruggeri-van Wart-Howard estimates for 1986 is an unfortunate vacuum in the empirical picture of tax incidence in Canada.

- 3 The slow growth year was 1961 (see Gillespie 1991: Table C-1, for information on the state of the economy; and Table B-2, for the composition of federal revenues throughout the entire postwar period).
- 4 Total tax and non-tax revenues as a share of national income grew from 28% in 1951 to 41.2% in 1988.
- 5 In 1948 marginal tax rates ranged over 19 tax brackets, from a low of 10% on taxable income up to \$100 to a high of 80% on taxable income exceeding \$250,000. By 1988, after the 1971, 1983, and 1988 tax reforms, marginal tax rates (combined federal-provincial, but exclusive of surtaxes) ranged over three tax brackets, from a low of about 26% on taxable income up to \$27,500 to a high of about 45% on taxable income exceeding \$55,000.
- 6 This tax incidence pattern results from the exemptions or reduced contribution rates (health premiums) for very low income earners and the maximum contribution limits (unemployment insurance and CPP/QPP contributions) that take effect at a middle income range.
- 7 Quebec and Manitoba introduced payroll taxes in 1973 and 1983 respectively. The provincial payroll taxes of Figure 1 do not include the Ontario or Newfoundland payroll taxes, both of which were introduced in 1990.
- 8 The share of provincial retail sales taxes in total commodity tax revenues rose from 4 to 36% while the share of federal customs duties and selective excises fell from 44 to 20%, from 1951 to 1988.
- 9 The share of federal corporate income taxes in total revenues peaked over 1950–1952, declined throughout the 1950s, was more or less constant during the 1960s and declined throughout the 1970s and 1980s (Gillespie, 1991: Table B-2).
- 10 See Douglas (1990) for a discussion of the contribution of declining corporate profitability to the changes in corporate tax revenues over the 1960–1985 period.
- 11 Tax incidence estimates are sometimes derived for individuals or households rather than families. This study estimates the tax incidence for economic families (as did the four reference studies).

- Economic families consist of either unattached individuals or groups of individuals related by blood, marriage (including common law), or adoption living in the same household.
- 12 We use an annual time frame rather than a life-time measure of income, taxes and consumption, for reasons of data availability (and modelling complexities), conceptual consistency and policy relevance. See Vermaeten, Gillespie and Vermaeten (1994:355) for a discussion of the salient issues involved.
 - 13 This study focuses on the taxes that families pay, and we leave to future research the benefits that they receive from transfers and expenditures on goods and services.
 - 14 In addition to the references in note 1, see Musgrave, Carroll, Cook, and Frane (1951), Musgrave (1958:347-64, 374-82), Harberger (1962), Krzyzaniak and Musgrave (1963), Musgrave (1964), Levesque (1967), Johnson (1968), Spencer (1969), Mieszkowski (1972), Dusansky and Tanner (1974), Reynolds and Smolensky (1977), Bird and Slack (1978), Dahlby (1985), Smolensky, Hoyt and Danziger (1987), Davies (1992), Kitchen (1992) and Dahlby (1993).
 - 15 Notwithstanding these differences, all studies that have attempted to estimate total tax incidence have used (some definition of) income as the appropriate measure of economic well-being or the index of equity. The theoretical case for consumption as a preferable measure of well-being, dating from Hobbes (1651) has, to date, not resulted in empirical estimates of total tax incidence based on consumption. Such estimates would likely differ from those presented here.
 - 16 Pre-fisc, broad and post-fisc income correspond to broad, basic and adjusted broad income respectively in Gillespie (1966;1980a;1980b;1980c) and Gillespie and Wurts (1979).
 - 17 See Vermaeten, Gillespie and Vermaeten (1994) for the general methodology used in estimating the various additions to income for 1988.
 - 18 See the discussion in Boadway and Kitchen (1984:31), Musgrave, Musgrave and Bird (1987: 311,320,347), and Rosen (1995:390-93).
 - 19 While most types of capital income are decreased, the value of rental income, including imputed rent on owner-occupied homes, is increased. This is necessary because nominal mortgage payments overestimate the real interest expense incurred by landlords and homeowners. The inflation component of mortgage payments decreases the real value of outstanding mortgages and therefore does not represent a true expense. The interest component of carrying expenses charged against investment income is also adjusted, resulting in an increase in income.
 - 20 See, for example, Statistics Canada (1991 and 1993).
 - 21 The tax data are drawn from the government sector in the SNA, with some details extracted from *The Financial Management System (FMS)* or *Public Accounts* data. See Vermaeten, Gillespie, and Vermaeten (1994:360), and Appendix B, available from the authors on request, for the derivation of Appendix Table 2.
 - 22 The tax incidence model and empirical observations supporting each of the tax shifting assumptions is explained fully in Vermaeten, Gillespie and Vermaeten (1994:361-70,378-79,400-12), along with our choice among competing hypotheses. Specifically, we explore the issues surrounding the incidence of: corporate income taxes, sales and excise taxes (including the Browning (1978) alternative and the treatment of transfers), property taxes, payroll taxes and natural resource taxes.
 - 23 Normand, Hawley and Gillespie (1983) used a Lorenz curve data adjustment to present comparisons of fiscal incidence (the combined impact of expenditure incidence and tax incidence) over time in Canada; but the adjustment still relied upon aggregate grouped source data for each of the reference years examined.
 - 24 The SPSP/M was also used to measure total tax incidence for Canada by Ruggeri, van Wart and Howard (1994) and for Ontario by Block and Shillington (1994). For a description and evaluation of the SPSP/M see Bordt et al. (1990) and MacNaughton (1992).
 - 25 Microdata tapes exist for some of the required variables (e.g., income data from the *Survey of Consumer Finances*) while for some other important variables no microdata exist. The microdata that do exist are, for the most part, raw survey data, and the sampling frames for the various surveys differ (e.g., *FAMEX* uses a different frame than the *Survey of Consumer Finances*).
 - 26 Ideally we would have liked to build up microdatabases for 1951, 1961, and 1969 from micro survey data for those years using a methodology similar to that used by Statistics Canada to build its 1984 and 1988 SPSP/M microdatabases. However, this has not been possible because the procedure is too complicated and most of the required microdata does not exist. Our approach essentially involves reshaping the 1988 SPSP/M database to fit all of the aggregate data available for the earlier years. Fortunately, this simpler methodology is quite adequate for our purposes. It yields realistic distributions of the major required variables for 1951, 1961, and 1969. The resulting tax incidence estimates are, in our opinion, sufficiently accurate, and they are robust to differing assumptions concerning the exact distribution of many of the variables. See Appendix B (available from the authors on request) for further details of our approach.

- 27 See the discussion of 'bracket jumpers' in Gillespie (1966:8, note 9) and (1980b:27).
- 28 See Appendix Table 1, lines 15-17 for total taxes as a per cent of national income, money income and broad income, respectively, and lines 25-27 for taxes borne by Canadian families as a per cent of the same three income measures.
- 29 The progressive and regressive case shifting assumptions are summarized above (p.323) and developed and explained in Vermaeten, Gillespie and Vermaeten (1994:367-9). Table 1 also provides the income groups for the standard case results; for 1988, the poorest 10% of families had incomes of \$10,523 or less, 50% of families had incomes of \$38,184 or less, and the richest 2% of families had incomes of \$174,852 or higher.
- 30 See Appendix Table 4; the average tax rate declined during the 1950s from 18 to 16% and increased to 18% during the 1960s.
- 31 These results are based on the tax system before the manufacturers' sales tax was replaced with the goods and services tax (GST). Preliminary findings (Brooks, 1990:37; and Grady, 1990:640) suggest that the GST is somewhat less regressive than the MST. However, until a tax incidence study is done for the 1990s, with the GST in place, we cannot say for certain whether the general pattern of commodity tax incidence would be similar under the two taxes.
- 32 These recommendations are based on the findings for 1988, the last year for which the SPSPD/M microdatabase is available. While it is unlikely that the general overall patterns of tax incidence have changed significantly since then, it is possible that increases in some provincial surtaxes may have resulted in an increase in the overall average tax rate, and narrowed the room for possible tax increases.

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Appendix A

Table 1

The Canadian economy and the government sector, selected years, 1951-1988

	1951	1961	1969	1978	1988
National income					
1 Nominal GNP (billion of \$)	21.6	39.6	79.8	241.6	584.5
2 Price Index (1981 = 100)	24.0	30.0	39.0	74.0	134.0
3 Real GNP (billion of 1981\$)	90.0	132.6	205.7	325.6	435.1
4 Real GNP growth rate (%)	5.0	2.8	5.3	5.5	4.9
5 Population (millions)	14.0	18.2	21.1	23.5	25.9
6 Real GNP per capita (1981\$)	6,429.0	7,285.0	7,749.0	13,856.0	16,799.0
Government in the economy as a percentage of national income					
7 Total government expenditures	24.2	30.8	34.1	41.1	44.0
8 Total government revenues	28.0	28.7	36.5	37.9	41.2
9 Deficit (surplus)	(3.80)	2.10	(2.40)	3.20	2.80
Income components as a percentage of broad income					
10 Market income	74.8	70.8	70.9	NA	67.6
11 Transfer income	4.3	6.5	6.3	NA	9.4
12 Total money income	79.1	77.3	77.2	NA	77.0
13 Additions to income	13.0	16.6	15.6	NA	15.8
14 Adjustments for model consistency	7.9	6.1	7.2	NA	7.2
Taxes as a percentage of various income concepts					
15 Gross National Product	25.7	24.8	33.6	NA	35.4
16 Total money income	36.6	37.1	47.3	NA	49.0
17 Broad income	29.3	29.2	37.4	NA	38.9
Taxes by source as a percentage of total taxes					
18 Personal income tax	17.6	21.8	30.0	NA	37.1
19 Corporation income tax	25.7	16.4	14.3	NA	9.2
20 Commodity taxes	35.0	34.9	28.9	NA	25.0
21 Payroll taxes	4.5	5.6	9.4	NA	13.9
22 Property taxes	10.3	14.7	12.0	NA	10.1
23 Estate taxes	1.3	1.5	0.9	NA	NA
24 Other taxes	5.5	5.1	4.6	NA	4.6
Taxes borne by Canadians, as a percentage of various income concepts					
25 Gross National Product	23.4	23.0	30.5	NA	33.8
26 Total money income	33.3	34.5	43.1	NA	46.9
27 Broad income	26.6	27.2	34.1	NA	37.2

Table 1 (contd.)

Taxes borne by Canadians, by source, as a percentage of total taxes

28 Personal income tax	19.3	23.4	31.8	NA	39.2
29 Corporation income tax	19.5	11.5	9.9	NA	6.7
30 Commodity taxes	38.4	37.4	30.6	NA	24.6
31 Payroll taxes	5.0	6.0	9.9	NA	14.6
32 Property taxes	10.9	15.2	12.2	NA	10.1
33 Estate taxes	1.4	1.7	1.0	NA	NA
34 Other taxes	5.6	4.8	4.6	NA	4.8

SOURCES: Gillespie (1991), Leacy (1983) and Canadian Tax Foundation (1972, 1987 and 1991).

For detailed source on the derivation and methodology, see Appendix B (available from authors on request).

Table 2

Total taxes, by level of government, selected years 1951–1988

	Federal	Provincial millions of dollars	Local	Total
1951				
1 Personal income tax	977			977
2 Corporation income tax	1,240	189		1,429
3 Commodity taxes	1,461	452	30	1,943
4 Payroll taxes	152	99	0	251
5 Property taxes	0	7	565	572
6 Estate taxes	38	34		72
7 Other taxes	18	265	22	305
8 Total taxes	3,886	1,046	617	5,549
1961				
1 Personal income tax	1,850	287		2,137
2 Corporation income tax	1,232	378		1,610
3 Commodity taxes	2,203	1,111	103	3,417
4 Payroll taxes	277	269	0	546
5 Property taxes	0	8	1,436	1,444
6 Estate taxes	71	80		151
7 Other taxes	0	498	0	498
8 Total taxes	5,633	2,631	1,539	9,803
1969				
1 Personal income tax	5,588	2,142		7,730
2 Corporation income tax	2,839	862		3,701
3 Commodity taxes	4,008	3,429	11	7,448
4 Payroll taxes	1,509	912	0	2,421
5 Property taxes	0	42	3,045	3,087
6 Estate taxes	101	141		242
7 Other taxes	0	1,154	22	1,176
8 Total taxes	14,045	8,682	3,078	25,805
1988				
1 Personal income tax	46,160	30,628		76,788
2 Corporation income tax	11,857	7,222		19,079
3 Commodity taxes	25,873	25,788	0	51,661
4 Payroll taxes	19,573	9,265	0	28,838
5 Property taxes	0	1,515	19,313	20,828
6 Estate taxes				0
7 Other taxes	0	8,362	1,144	9,506
8 Total taxes	103,463	82,780	20,457	206,700

For detailed source notes on the derivation and methodology, see Appendix B (available from authors on request).

Table 3

Total income, by income source, Canada, selected years, 1951-1988

	1951	1961	1969	1988
		millions of dollars		
Market income				
1 Employment income	13,234	22,158	47,728	313,466
2 Investment income	914	1,695	3,147	41,347
3 Other income	201	411	1,218	17,437
4 Total market income	14,349	24,264	52,093	372,250
5 Total money income	15,170	26,453	56,612	422,171
Additions to income				
6 Imputed interest income	100	247	552	4,870
7 Imputed rental income	556	1,295	2,131	17,796
8 Food and fuel grown and consumed on the farm	239	180	133	218
9 Employer provided benefits	50	121	298	3,400
10 Capital gains on principal residence	681	1,082	3,826	43,294
11 Capital gains on shares	392	1,216	2,722	10,283
12 Capital gains on other real estate	210	584	1,453	1,800
13 Investment income of life insurance companies	18	170	312	760
14 Adjustment for RPPs and RRSPs	144	581	1,988	30,000
15 Inheritances and gifts	588	1,154	2,181	16,371
16 Total additions to income	2,978	6,630	15,596	128,792
Adjustments for model consistency				
17 Backward shifted payroll taxes	115	206	1,020	16,819
18 Corporate income tax on corporate earnings	985	1,046	2,405	13,546
19 Backward shifted commodity taxes	272	478	1,116	4,924
20 Backward shifted property tax	79	194	545	2,421
21 Natural resource taxes on owners	51	108	94	569
22 Total adjustments for model consistency	1,502	2,032	5,180	38,279
23 Inflation adjustments	-694	-1,574	-5,809	-57,902
24 Pre-Fisc income	18,135	31,352	67,060	481,419
25 Transfer income	821	2,189	4,519	49,921
26 Broad income	18,956	33,541	71,579	531,340

For detailed source notes on the derivation and methodology, see Appendix B (available from authors on request).

Table 4

Effective tax rates, by broad income percentile group, standard case, Canada, 1951, 1961, 1969, 1988

Percentile	1%	11%	21%	31%	41%	51%	61%	71%	81%	91%	99%	All
	10%	20%	30%	40%	50%	60%	70%	80%	90%	98%	100%	
1951												
By level of government												
Total federal taxes	19.1%	15.2%	15.4%	13.2%	13.2%	14.2%	15.2%	15.2%	16.5%	18.2%	36.1%	18.4%
Total provincial taxes	10.9%	6.8%	6.3%	5.3%	5.0%	5.0%	5.2%	4.8%	4.1%	3.8%	8.2%	5.3%
Total local taxes	6.5%	4.9%	4.1%	3.7%	3.3%	3.3%	3.2%	3.0%	2.9%	2.5%	1.9%	3.0%
By revenue source												
Personal income tax	0.6%	1.7%	2.6%	2.4%	2.8%	3.3%	3.8%	4.8%	7.0%	8.2%	6.2%	5.2%
Corporate income tax	1.9%	1.1%	0.8%	0.8%	0.9%	0.9%	1.2%	1.6%	4.1%	28.2%	5.2%	
Commodity taxes	23.5%	14.6%	14.0%	11.6%	11.1%	11.6%	12.0%	10.8%	10.3%	8.5%	5.1%	10.2%
Payroll taxes	1.8%	1.6%	2.1%	2.1%	2.3%	2.1%	2.4%	2.1%	0.8%	0.3%	0.1%	1.3%
Property taxes	6.2%	4.7%	3.9%	3.6%	3.2%	3.2%	3.1%	2.9%	2.7%	2.4%	1.9%	2.9%
Other & estate taxes	4.4%	2.5%	2.0%	1.6%	1.4%	1.4%	1.4%	1.2%	1.1%	1.0%	4.8%	1.8%
Total, all levels of government	36.5%	26.9%	25.8%	22.1%	21.6%	22.5%	23.6%	23.0%	23.5%	24.5%	46.2%	26.6%
1961												
By level of government												
Total federal taxes	14.9%	11.3%	11.8%	12.5%	13.5%	14.2%	14.7%	14.9%	15.7%	14.5%	23.0%	15.5%
Total provincial taxes	15.0%	9.6%	8.2%	7.7%	7.7%	7.4%	7.2%	6.9%	6.8%	5.8%	10.1%	7.6%
Total local taxes	7.6%	6.2%	5.1%	5.2%	5.1%	4.9%	4.6%	4.4%	4.2%	3.3%	2.3%	4.2%
By revenue source												
Personal income tax	0.4%	1.0%	1.9%	2.8%	3.9%	5.3%	6.7%	7.3%	8.5%	8.0%	7.5%	6.4%
Corporate income tax	0.6%	0.6%	0.4%	0.4%	0.4%	0.5%	0.5%	0.7%	1.0%	2.5%	15.4%	3.1%
Commodity taxes	19.4%	13.1%	11.7%	11.4%	11.6%	11.6%	11.8%	11.5%	11.4%	8.5%	5.2%	10.2%
Payroll taxes	5.0%	3.8%	4.3%	4.1%	4.0%	2.9%	1.6%	1.2%	0.4%	0.3%	0.1%	1.6%
Property taxes	7.6%	6.2%	5.1%	5.2%	5.1%	4.9%	4.6%	4.4%	4.2%	3.3%	2.3%	4.2%
Other & estate taxes	4.5%	2.4%	1.7%	1.4%	1.3%	1.2%	1.1%	1.1%	1.0%	0.9%	4.9%	1.8%
Total, all levels of government	37.5%	27.0%	25.1%	25.4%	26.3%	26.4%	26.4%	26.2%	26.7%	23.6%	35.4%	27.3%

Table 4 contd.

Effective tax rates, by broad income percentile group, standard case, Canada, 1951, 1961, 1969, 1988

Percentile	1%	11%	21%	31%	41%	51%	61%	71%	81%	91%	99%	All
	10%	20%	30%	40%	50%	60%	70%	80%	90%	98%	100%	
1969												
By level of government												
Total federal taxes	14.0%	12.4%	14.6%	16.1%	17.5%	17.7%	17.7%	17.5%	17.7%	17.0%	26.6%	18.3%
Total provincial taxes	20.3%	13.6%	12.7%	12.1%	12.3%	11.9%	11.6%	11.2%	10.9%	9.8%	13.0%	11.6%
Total local taxes	8.6%	5.9%	5.7%	5.3%	4.9%	4.5%	4.2%	4.1%	3.8%	3.8%	2.8%	4.2%
By revenue source												
Personal income tax	1.2%	3.2%	5.3%	7.3%	9.3%	10.3%	11.2%	11.9%	13.0%	12.3%	12.2%	10.8%
Corporate income tax	0.9%	0.6%	0.8%	0.6%	0.6%	0.6%	0.6%	0.9%	1.1%	3.1%	17.5%	3.4%
Commodity taxes	20.5%	14.2%	13.7%	12.8%	12.9%	12.4%	11.5%	11.0%	10.2%	8.1%	5.7%	10.4%
Payroll taxes	5.2%	4.8%	5.1%	5.5%	5.3%	4.7%	4.4%	3.5%	3.1%	2.0%	0.9%	3.4%
Property taxes	8.5%	5.8%	5.7%	5.3%	4.8%	4.4%	4.1%	4.1%	3.7%	3.8%	2.8%	4.1%
Other & estate taxes	6.6%	3.2%	2.5%	2.0%	1.9%	1.7%	1.5%	1.4%	1.2%	1.4%	3.3%	1.9%
Total, all levels of government	42.9%	31.9%	33.0%	33.5%	34.7%	34.1%	33.4%	32.8%	32.3%	30.6%	42.4%	34.1%
1988												
By level of government												
Total federal taxes	9.0%	10.9%	13.5%	15.7%	17.4%	18.8%	19.2%	19.3%	19.0%	19.4%	23.1%	18.8%
Total provincial taxes	13.3%	12.6%	13.2%	13.9%	14.4%	15.1%	15.1%	14.7%	14.1%	13.7%	16.3%	14.5%
Total local taxes	8.5%	6.9%	6.0%	5.4%	4.8%	4.4%	4.0%	3.8%	3.4%	3.1%	3.1%	4.0%
By revenue source												
Personal income tax	1.0%	4.3%	6.9%	8.9%	11.1%	13.3%	14.4%	15.3%	15.9%	17.5%	19.0%	14.6%
Corporate income tax	0.4%	0.7%	0.8%	0.9%	0.8%	0.9%	0.9%	1.2%	1.3%	2.1%	11.6%	2.5%
Commodity taxes	14.0%	12.2%	11.9%	11.9%	11.3%	10.9%	10.2%	9.4%	8.5%	7.5%	5.9%	9.1%
Payroll taxes	2.2%	3.2%	4.5%	5.7%	6.6%	7.1%	7.2%	6.8%	6.2%	4.9%	1.7%	5.4%
Property taxes	8.0%	6.5%	5.7%	5.1%	4.5%	4.2%	3.8%	3.6%	3.3%	3.0%	3.0%	3.8%
Other & estate taxes	5.2%	3.5%	2.8%	2.5%	2.2%	2.0%	1.8%	1.6%	1.5%	1.3%	1.4%	1.8%
Total, all levels of government	30.8%	30.4%	32.6%	34.9%	36.6%	38.3%	38.2%	37.8%	36.5%	36.2%	42.5%	37.2%

For detailed source notes on the derivation and methodology, see Appendix B, Tables 13-16 (available from authors on request).