

OXFORD

**TOP** INCOMES  
OVER THE  
**20TH**  
**CENTURY**

*A Contrast Between Continental European  
and English-Speaking Countries*

*Edited by* A. B. ATKINSON & T. PIKETTY

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## The Evolution of High Incomes in Canada, 1920–2000<sup>1</sup>

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### 6.1 INTRODUCTION

The evolution of income inequality during the process of development has attracted enormous attention in the economics literature as well as in the political sphere. Understanding the relative roles of ‘natural’ economic progress such as technological change versus policy interventions such as taxation, redistribution, and regulation in shaping the distribution of income requires analysing long-term series on inequality. Income tax statistics are the only source of income distribution data available on a regular annual basis for extended periods of time, and are still the best source to study upper income groups. Recent studies, gathered in this volume, have used income tax statistics to construct inequality time series for various countries over the course of the twentieth century. All these studies have found dramatic declines in the top income shares in the first part of the century but the pattern has been different in the last two or three decades: an almost complete recovery in the United States, some recovery in the United Kingdom and no recovery at all in France. This divergence casts doubt on pure technological explanations, although other explanations are still tentative.

These ‘high income’ studies raise three important issues. First and most important, do tax statistics reveal real changes in income concentration rather than changes in tax reporting behaviour following tax changes? Many US

<sup>1</sup> This chapter is a longer version of ‘The Evolution of High Incomes in Northern America: Lessons from Canadian Evidence’ (Saez and Veall 2005). We thank Tony Atkinson, Tim Besley, David Card, Deb Fretz, Thomas Lemieux, Bruce Meyer, Thomas Piketty, and numerous seminar participants for helpful discussions and comments. We also thank Claude Bilodeau, Eric Olson, and Hélène Roberge of Statistics Canada for their assistance with computations from the Longitudinal Administrative Database; Emmanuel Manolikakis of Statistics Canada for additional national accounting data; Josée Begin, Gioia Campagna, Kevin Kennedy, and Ron Naylor of the Canada Customs and Revenue Agency for additional taxation data; and Simo Goshev, Alan Macnaughton, Mohammad Rahaman, Matthew Stewart, and the Canadian Tax Foundation library for assistance and expertise. Financial support from the Sloan Foundation, NSF Grant SES-0134946, and from the Social Sciences and Humanities Research Council of Canada to the SEDAP programme is gratefully acknowledged.

studies have shown, for example, that tax induced income shifting between the individual and corporate tax base can have dramatic effects on reported individual incomes (see, e.g., Gordon and Slemrod 2000 and Saez 2004). Second, an increase in cross-sectional income concentration over time, as in the United States and the United Kingdom in recent years, has very different welfare consequences depending on whether or not it is associated with increases in income mobility, and none of the previous studies has analyzed the mobility question for high income earners. Finally, there has been a substantial rise in married women's labour force participation in recent decades. To what extent is the increase in US top incomes (which must be calculated at a family level for the United States as the US has family based income taxation) due to increases in spousal income correlation rather than increased individual income concentration?

This study sheds new light on these three issues by using Canadian income tax statistics beginning in 1920 (the first year such statistics were produced) to estimate homogeneous series of income shares and income composition for various upper income groups within the top decile. Our series are based on individual income because personal income taxes in Canada are based on individual income (not on family income as in the United States). For more recent years, we use a micro-data set of a kind not available for the United States—a large panel covering 20% of all Canadian individual tax returns but also linked by family—to analyze wage income concentration, mobility within top income groups, and the differences between the patterns of individual and family income concentration.

Our estimated top shares series show that, similar to the French, British, and American experiences, top income shares in Canada fell sharply during the Second World War with no recovery during the next three decades. Over the last 20 years, top income shares in Canada have increased dramatically, almost as much as in the United States. This change has remained largely unnoticed because it is concentrated within the top percentile of the Canadian income distribution and thus can only be detected with tax return data covering very high incomes. As in the United States, the increase is largely due to a surge in top wages and salaries. As a result, the composition of income in the top income groups has also shifted in Canada since the Second World War: many more high income individuals derive their principal income from employment instead of as a return to capital.

The recent surge in Canadian top income shares does not seem to be mainly the consequence of tax induced changes in behaviour, including tax reporting behaviour. The Canadian reduction in marginal tax rates was much more modest than in the United States and did not induce shifting between the corporate and personal income tax base. Moreover, much of the Canadian surge occurred when there were no major tax changes. There is evidence (including a formal regression analysis we present) that the surge in Canadian top incomes has a US association, perhaps because many high income Canadians have the option to leave to work in the United States. If this brain drain threat explanation (or some other US related explanation) is correct, this would imply that the surge in top reported incomes

in the United States has not just been a tax induced change in tax reporting behaviour. Otherwise it is difficult to reconcile the association between US and Canadian top incomes.<sup>2</sup>

Longitudinal micro-data show that income mobility for high income earners in Canada has been stable or has even decreased slightly since 1982. Similarly, top income shares based on three or five year averages display the same surge as those based on single year income. This suggests that the recent increase in cross-sectional income concentration is associated with a large increase in the concentration of lifetime resources and welfare. Using the family linkages in the Canadian micro-data, we also show that the increase in income concentration is identical at the family and individual levels.

To the best of our knowledge, this is the first time that Canadian income tax statistics have been exploited to construct long-term series on inequality in Canada. Blackburn and Bloom (1993) summarize a number of studies that examine both individual and family income inequality in Canada in the post-war period. The view that emerges from their summary is that changes in inequality from the late 1940s to the 1980s were modest. Heisz et al. (2001) summarize more recent Canadian inequality research which largely finds that Canadian earnings inequality has increased since 1980 but by much less than in the United States. Most of the studies discussed in these papers are based on survey data and none examine the war/pre-war period or focus on top shares.

The chapter is organized as follows. Section 6.2 describes our data sources and outlines our estimation methods. In Section 6.3, we present and analyze the trends in top income shares and their composition. Section 6.4 focuses on the recent increase in top income shares. Section 6.5 discusses the role of taxation. Finally, Section 6.6 offers a brief conclusion. All series and complete technical details of our methodology are gathered in the appendices.

## 6.2 DATA AND METHODOLOGY

Our estimates are from personal income tax return statistics compiled annually by the Canadian federal taxation authorities since 1920. Before the Second World War, because of high exemptions, only about 2 to 8% of individuals had to file tax returns and therefore, by necessity, we must restrict our analysis to the top 5% of the income distribution (denoted as P95–100).<sup>3</sup> Beginning with the Second World War we can extend our analysis to the top decile (P90–100). We also construct

<sup>2</sup> The question of whether the surge in top US incomes is due to supply side effects following tax cuts or to non-tax related effects is still debated (see Saez 2004 for a recent survey). The Canadian evidence could be consistent with either explanation of the US surge.

<sup>3</sup> All taxpayers with income above the exemption threshold are required to file a return. In the years when fewer than 5% of individuals file we interpolate from single persons to married couples. More than 5% of singles always file because of lower exemptions for singles. (See Appendix 6B for details of this procedure and its validation.)

series for a number of finer fractiles, e.g., P90–95, P95–99, P99–100 (the top 1%), P99.5–100 (the top 0.5%), P99.9–100 (the top 0.1%) and P99.99 (the top 0.01%). Each fractile is defined relative to the total number of adults (aged 20 and above) from the Canadian census (not the number of tax returns filed). Column (1) in Table 6A.1 reports the number of adult individuals in Canada from 1920 to 2000. The adult population has increased from about 5 million in 1920 to almost 23 million in 2000. In 2000, for example, there were 22.8 million adults and thus the top decile is defined as the top 2.28 million income earners, the top percentile as the top 228,000 income earners, etc. Column (2) in Table 6A.1 reports the actual number of returns filed. Table 6.1 gives thresholds and average incomes for a selection of fractiles for Canada in 2000.

We define income as gross market income before all deductions and including all income items reported on personal tax returns: salaries and wages, private pension income, self-employment and small business net income, partnership and fiduciary income, dividends, interest, other investment income, and other smaller income items. Realized capital gains are not an annual flow of income (in general, capital gains are realized infrequently in a lumpy way) and form a very volatile component of income with large aggregate variations from year to year depending on stock price variations. Moreover before 1972, capital gains were not taxable and hence not reported on tax returns. Therefore, we focus mainly on series excluding capital gains.<sup>4</sup> Our income definition is before personal income taxes and personal payroll taxes but after employers' payroll taxes and corporate income taxes. We exclude from our income definition all transfers such as unemployment insurance, welfare benefits, public retirement benefits, etc.

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**Table 6.1** Thresholds and average incomes in top groups within the top decile in 2000

Thresholds (1)	Income level (2)	Fractiles (3)	Number of tax units (4)	Average Income (5)
		Full Population	22,807,585	\$24,859
P90	\$59,232	P90–95	1,140,379	\$66,310
P95	\$75,670	P95–99	912,303	\$95,982
P99	\$145,774	P99–99.5	114,038	\$171,728
P99.5	\$210,150	P99.5–99.9	91,230	\$303,035
P99.9	\$530,311	P99.9–99.99	20,527	\$923,385
P99.99	\$2,396,050	P99.99–100	2,281	\$4,695,923

*Notes:* Computations based on income tax return statistics (see Appendix Section A). Income defined as annual gross income excluding capital gains and before individual taxes. Amounts are expressed in 2000 Canadian dollars. US\$1 = CA\$ 1.5.

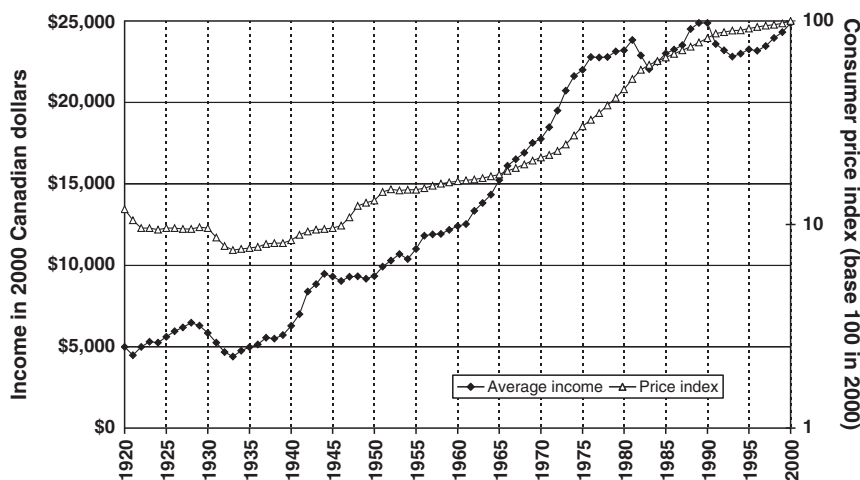
*Source:* Table A and Table B3, row 2000.

<sup>4</sup> In the appendix, in order to assess the sensitivity of our results to the treatment of capital gains, for the period 1972–2000, we compute for each fractile (defined by ranking incomes excluding capital gains) the percentage of additional income reported in the form of realized capital gains. We also recompute our top income shares including realized capital gains in income (both for the ranking and the levels and shares computations). For the period 1972–2000, series with and without capital gains display about the same general pattern. See in particular Figure 6A.1.

Our principal data consist of tables of the number of tax returns, the amounts reported, and the income composition (since 1946) for a large number of income brackets. As the top tail of the income distribution is very well approximated by Pareto distributions, we can use simple parametric interpolation methods (as described earlier in Appendix 5C) to estimate the thresholds and average income levels for each fractile. For the years when micro-data are available, we check that the errors introduced by the interpolation method are negligible.

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We then estimate shares of income by dividing the income amounts accruing to each fractile by 80% of Personal Income not including transfers from the National Accounts.<sup>5,6</sup> The total income and average income (per adult) series are reported in Columns (4) and (5) of Table 6A.1. These series are reported in real (2000) Canadian dollars. Our CPI deflator used to convert current incomes to real incomes is reported in Column (6).<sup>7</sup> The average income series along with the CPI deflator is plotted in Figure 6.1. Average real income per adult has increased by a factor of five from 1920 to 2000.<sup>8</sup> The Great Depression decreased real income by about one-third. The Second World War was a period of very high



**Figure 6.1** Average real income and consumer price index in Canada, 1920–2000

Source: Table A, Columns Average income (in real 2000 Canadian dollars) and CPI (base 100 in 2000).

<sup>5</sup> Using tax returns to compute the level of top incomes and national accounts to compute the total income denominator dates from the famous Kuznets (1953) study on American inequality.

<sup>6</sup> Personal Income is higher than total income from tax returns because it includes non-taxable items such as imputed rent, imputed interest, etc. In recent years in which virtually all adults with income file tax returns, total income from tax returns has always been very close to 80% of Personal Income net of transfers.

<sup>7</sup> Columns (7) and (8) report the average net tax (including both federal and provincial income taxes) and the average realized capital gain per adult.

<sup>8</sup> Average income during the same period in the United States has multiplied by a factor of four. Population in the United States has also grown more slowly.

growth in income. Average income grew steadily from 1950 to 1976. Since then, average income has increased very little with sharp downturns from 1981 to 1983 and from 1990 to 1993.

After analysing the top share data, we turn to the composition of income, concentrating on the period since 1946 when composition data were first published. Using this published information and a simple linear interpolation method, we decompose the amount of income for each fractile into six components: salaries and wages, professional income, business income, dividends, interest income, and other investment income.

We produce top wage share series for the period 1972 to 2000, using composition tables for 1972 to 1981<sup>9</sup> and longitudinal micro-files of tax returns (covering 20% of the total tax-filing population, over 4 million records in 2000) available beginning in 1982. In this case, fractiles are defined relative to the total number of individuals with positive wages. (Throughout this paper, ‘wages’ or ‘wage income’ includes salaries or any other type of employment earnings, including exercised stock options.) We also link married couples and re-compute top wage income shares at the family level. In that case, each fractile is defined relative to the total number of families (single adults and couples) with positive wage income. We also use the longitudinal structure of the micro-data to study income mobility. We compute mobility matrices for all our income groups for one, two, and three year lags and top income shares using real income averaged over three and five years instead of single year income.<sup>10</sup>

## 6.3 TOP INCOME SHARES

### Trends

The basic series of top income shares are presented in Table 6B.1. Figure 6.2, Panel A displays the income share of the top 5% (P95–100) from 1920 to 2000 in Canada. The top 5% share displays sharp fluctuations up to the end of the Second World War (between 30% and 40% of total income) and is much more stable afterwards (around 25%). Before the Second World War, the fluctuations are strikingly counter-cyclical. The top share increases sharply during each downturn episode of the inter-war period: the sharp depression of 1920–21, the Great Depression from 1930–33, and the pre-Second World War downturn of 1937–38. The top 5% share tends to decrease during the recoveries from the downturns (1921–23, 1933–35, and the Second World War), although the pattern is less pronounced than for the downturns. The top 5% share declines drastically during the Second

<sup>9</sup> Top wage shares for 1972–81 are estimated using the number of tax returns reporting wages and the amount of wages reported by income brackets. See Appendix 6D.

<sup>10</sup> In this case, our adult population and denominator are defined as the average across the relevant years.

World War years from almost 40% in 1938 to less than 25% in 1945.<sup>11</sup> This drastic reduction implies that the average income in the top 5% dropped from 8 times the average income before the Second World War to just 5 times the average income in 1945. After the Second World War, the top 5% share declines very slowly (with very small fluctuations) from 25% to 22% by the mid 1980s. However, in the last 20 years, the top share has gone up substantially to about 29% in 2000, but is still substantially below its level just before the Second World War.

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Therefore, the Canadian evidence suggests that the twentieth century decline in inequality took place in a very specific and brief time interval, namely the Second World War years. This evidence is very much in line with the French (Piketty, Chapter 3 in this volume), and American (Piketty and Saez, Chapter 5 in this volume), findings. Moreover, the pattern of the sharp upturns and downturns in the pre-war period suggests that the business cycle was the main driving factor in these fluctuations. As a result, the traditional Kuznets inverted U-curve theory of inequality does not fit well with the Canadian experience over the century. The smooth increase in the top 5% share over the last 20 years seems to fit better with the skilled-biased technology explanations put forward in the case of the United States (see the survey by Acemoglu 2002). However, even for this later period, we will present further evidence that tends to contradict the technology explanation.

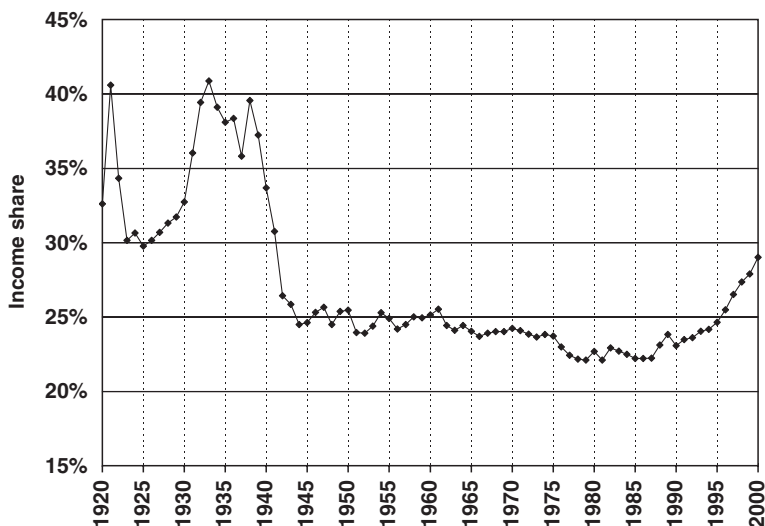
In order to understand the overall pattern of top income shares, it is useful to decompose the top decile into three groups, P90–95, P95–99, and the top percentile P99–100. The share of income accruing to these three groups is depicted in Figure 6.2, Panel B.. Three important facts should be noted. First, the counter-cyclical pattern before the Second World War appears to be stronger for P95–99 than for the top percentile. Second, the drop during the Second World War is much more substantial for the top percentile (from 18% in 1939 to 10% in 1945) than for the groups P90–95 and P95–99. Third, the upturn during the last two decades is concentrated in the top percentile (which increased from about 7.5% in the late 1970s to 13.5% in 2000). It is striking to note that the P90–95 share did not increase at all from the late 1970s and even the P95–99 share increased by less than one percentage point during the same period.

Examination of the very top groups (P99.9–100 and P99.99–100) in Figure 6.3 reinforces these three empirical findings. The higher the group, the sharper is the decline during the Second World War, and the sharper the recovery since the late 1970s. The very top group shares experience a drop of more than 50% from 1938 to 1945. Moreover, and in contrast to lower groups, the drop continues after the Second World War until the mid-1970s. As a result, the average individual in the top 0.01% had an income more than 200 times the average income in the adult population in 1920. In 1972, that individual had an income only 40 times higher than average. However, since the late 1970s, the very top groups have almost recovered their pre-Second World War levels. The top 0.01% share has been multiplied by almost five from 1972 to 2000. In 2000, average income in the

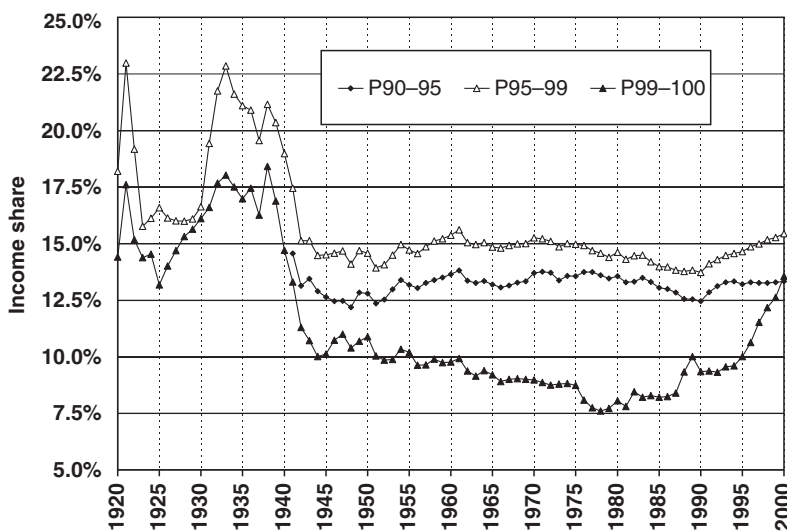
<sup>11</sup> In the United States, the fall in top income shares does not start before 1941, providing further evidence that the fall is closely related to the war.



**A. Top 5% income share in Canada**



**B. P90–95, P95–99, and P99–100 income shares in Canada**



**Figure 6.2 Top income shares in Canada, 1920–2000**

Source: Table B1, columns, P95–100, P90–95, P95–99, and P99–100.

top 0.01% is about 190 times the average income. We note, however, that this surge in top incomes is somewhat smaller than comparable estimates for the United States from Piketty and Saez (Chapter 5) also included in Figure 6.3. The fact that the rise in top shares is concentrated in the very top groups within

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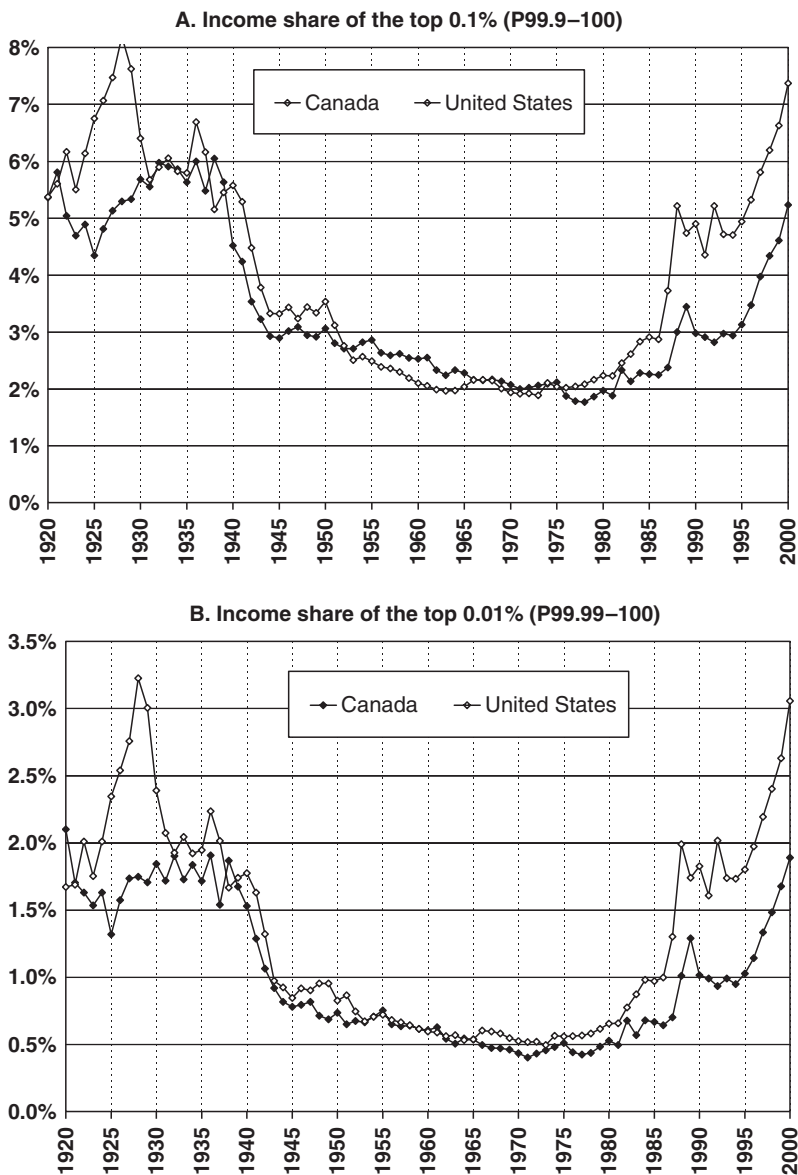


Figure 6.3 The income shares of the top income groups in Canada and US, 1920–2000

Source: Table 6B.1, this volume, and columns P99.9–100 and P99.99–100, United States, Piketty and Saez (chapter 5, this volume).

the top percentile explains why this surge in inequality at the top appears to have gone unnoticed in the literature on inequality in Canada. Tax returns are the only data that allow the analysis of groups within the top percentile. This surge in top incomes concentrated within the top groups, as opposed to gains spread

more evenly across skilled workers, casts doubt on the skill-biased technology explanation. We will come back to this issue when we focus our analysis on the pattern of top employment income shares in the last two decades. We can also note that there is a short-term spike in top shares in 1989, and that this spike is bigger for the very top groups. We believe that this is evidence of a (transitory) response to the marginal tax rate flattening consistent with the findings of Sillamaa and Veall (2001). We will discuss in more detail the important issue of the effects of taxation on reported top incomes in Section 6.5. Finally, the very top groups do not display the same counter-cyclical behaviour as other high income groups. The top 0.01% share actually declined during the 1920–21 downturn and did not increase during the Great Depression.

The remainder of the chapter will be aimed at understanding the three key facts: the counter-cyclical pattern of top shares (except the very top share) in the pre-war period, the sharp fall of top shares during the Second World War (with the most dramatic decline at the very top) with no recovery after the war, and the surge in top income shares over the last 20 years (characterized by an extreme concentration at the top). In order to make progress in our understanding, we now turn to the analysis of the composition of incomes reported by the top groups.

### The Composition of Top Incomes

Canada started publishing detailed information on the composition of incomes by income brackets in 1946. In the early period 1920 to 1945, only tables showing the distribution of occupations for all tax returns were published. Tax returns were classified according to the main source of income reported, such as employment income (employees), professional income (professionals), capital income (financial), and business income (merchants, manufacturers, etc.) These published tables display the number of tax returns in each occupation, and the total amount of taxes paid by each of these groups. The amount of taxes paid can be used to estimate roughly the average income in each category. Therefore, these tables are useful to cast light on the composition of incomes before the Second World War. Some of this evidence is summarized in Table 6C.1. Important findings emerge from this table.

First, at least two-thirds of tax filers are classified as employees during the interwar period. Therefore, it seems likely that group P95–99 is primarily composed of highly compensated employees during the pre-war period. This explains why the P95–99 share is so clearly counter-cyclical. The sharp downturns of the pre-war period were associated with sharp deflations (see Figure 6.1). Assuming wages are in general nominally rigid in the short-run, those who are able to keep their jobs during the recession experience a relative gain.<sup>12</sup> As we move up the income distribution, wage earners are replaced by businessmen and rentiers whose incomes are much more pro-cyclical. This explains why the very

<sup>12</sup> We provide further evidence on this point in the following section.

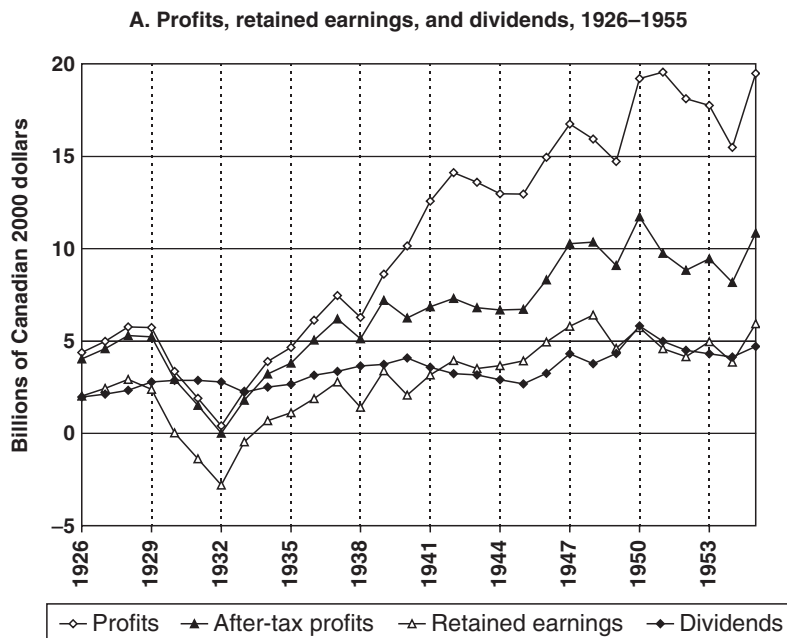
top shares within the top 1% do not display the same counter-cyclical pattern as the P95–99 share.

Second, the occupation tables also suggest that the very top of the income distribution in the pre-war period was formed of rentiers, as in the United States and France. In order to prevent personal income tax evasion through the accumulation of wealth within corporations (which were taxed at a flat rate substantially lower than the top personal income tax rate) and to provide some relief from double taxation, Canada issued a ruling creating Personal Corporations (see McGregor 1960) in 1925. Personal Corporations are defined as corporations controlled by a single individual or family and deriving at least a quarter of their profits from passive investments. Therefore personal corporations are clearly entities created by passive investors and not by owners-managers of businesses. Starting in tax year 1925, Personal Corporations were taxed directly at the personal level (as sub-chapter S corporations in the United States today). The occupation tables show that taxpayers classified as personal corporations had very large tax liabilities and hence very large incomes, and thus formed a substantial part of the top 0.01% group. Self-employed professionals and entrepreneurs form an intermediate category between the highly compensated employees and those with personal corporations.

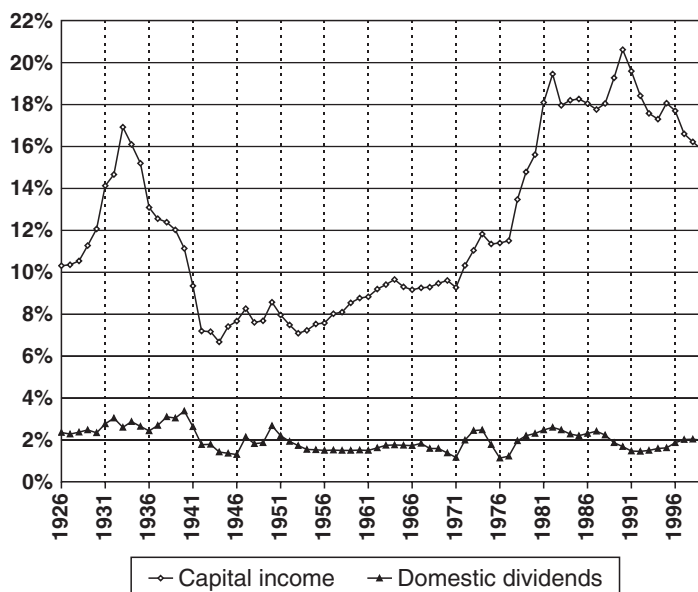
Beginning in the tax year 1942, occupation tables were published by income brackets. Table 6C.2 reports the composition of occupations (employees, entrepreneurs, and rentiers) for each fractile. It shows that the fraction of employees is indeed very high for groups below the top percentile and that rentiers formed the majority at the very top. However, the important fact to note is that the fraction of employees remains substantial, even within the very top fractiles, explaining why even the top shares did not follow the downturns of the pre-war period. This is in contrast with the American and French experiences where the fraction of employees was very small at the top. In those two countries, the share of capital income was much more important at the very top and thus the very top income share dropped during the pre-war downturns.

Our Canadian top share series display a sharp drop during the Second World War, and that drop is larger for the very top groups. This fall can be in part explained by the fiscal shock in the corporate sector. As part of financing the war, Canada increased substantially taxes on corporations.<sup>13</sup> Moreover, corporations reduced their payout ratios during the war because of the high demand for investment, and perhaps also to avoid the personal income tax which imposed extremely high marginal tax rates (in excess of 90%) on the highest incomes. This is illustrated in Figure 6.4. Panel A displays the real aggregate value of profits before and after taxes, along with dividend distributions of Canadian corporations from the National Accounts for the period 1926 (the first year the data are available) to 1955. The figure shows that, in spite of a two-fold increase in

<sup>13</sup> While during the war the corporation income tax itself increased modestly from 15% to 18%, an additional tax was introduced of the greater of 22% of total profits and 100% (part refundable after the war) of profit increases.



**B. Capital income and dividends in personal income, 1926–2000**



**Figure 6.4** Capital income in the corporate and the personal sector in Canada, 1926–2000

*Source:* Authors' computations based on National Income and Expenditure Accounts.

profits from 1938 to 1945, real dividend payments actually decreased slightly. This explains why top income rentiers experienced a sharp drop relative to the fast growing average adult income during the the Second World War episode (see column 5 in Table 6A.1). Panel B in Figure 6.4 displays the share of total capital income (excluding capital gains), and the share of dividends from Canadian corporations in total personal income in the Canadian economy from 1926 to 2000. Consistent with the evidence in Panel A, the share of domestic dividends in personal income falls by more than 60% from 1938 to 1945. Moreover, the share of total capital income (including interest income and distributions from Canadian owned foreign stock) falls from over 12% in 1938 to about 6–7% at the end of the war. These figures show clearly that capital income accruing to individuals was sharply reduced during the war and this might explain why top incomes fell so much in relative terms.

However, the shares of income groups P90–95 and P95–99 also fell during the Second World War. The evidence from occupational tables in the pre-war period and from 1946 on (see below) shows that these groups are composed largely of employees. Therefore, it seems salaries of highly compensated employees must have fallen relative to average earnings in the economy. Indirect evidence confirms those results. Since 1915 for the Canadian manufacturing sector, data are available on the number and total employment income of salary earners (supervisory and office employees with a compensation contract determined at the annual level) and non-salaried employees (workers with a compensation contract determined either at the hourly, daily, or weekly level).

Figure 6.5 displays the ratio of the average compensation of salaried to non-salaried employees (left Y-axis), along with the fraction of salaried employees (right Y-axis) from 1915 to 1948. This figure shows that salary earners gained significantly relative to non-salaried employees in terms of employment and compensation during the downturns of 1920–21 and the Great Depression but lost significantly during the Second World War. These results are consistent with our other findings for this period and particularly support the hypothesis that a compression in wage income inequality took place in Canada during the war years.<sup>14</sup>

From 1946 on, detailed tables on the composition of income were published annually. Therefore, for each fractile within the top decile, we were able to construct series on the composition of incomes. These series are presented in Table 6C.3. Figure 6.6 shows the composition of income for each fractile in 1946 (Panel A) and 2000 (Panel B). As expected, Panel A shows the share of wage income is a declining function of income and that the share of capital income (dividends, interest, and other investment income) is an increasing function of income. The share of entrepreneurial income (professional and business income)

<sup>14</sup> The most direct explanation (Dominion Bureau of Statistics 1948) was that war labour regulations set strict bounds on the raises that corporations were able to give to their high salary employees. For example, raises for employees with salaries above CA\$7,500 (corresponding roughly to percentile P99.5) required direct approval of the Minister. Similar evidence of wage compression has been found for the United States (Goldin and Margo 1992; Goldin and Katz 1999; and Piketty and Saez Chapter 5 in this volume).

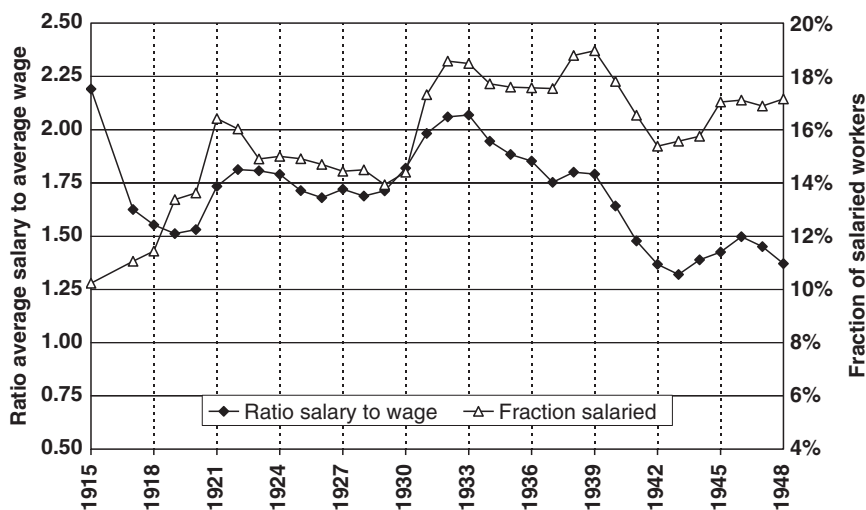


Figure 6.5 Salary vs. wage earners in manufacturing sector in Canada, 1915–48

Source: Series D280–287 in Urquhart and Buckley (1965) and The Canada Yearbook, various years.

Note: Number of wage workers for year 1925–30 has been reduced by 5% because of a change in the count of seasonal workers for these years.

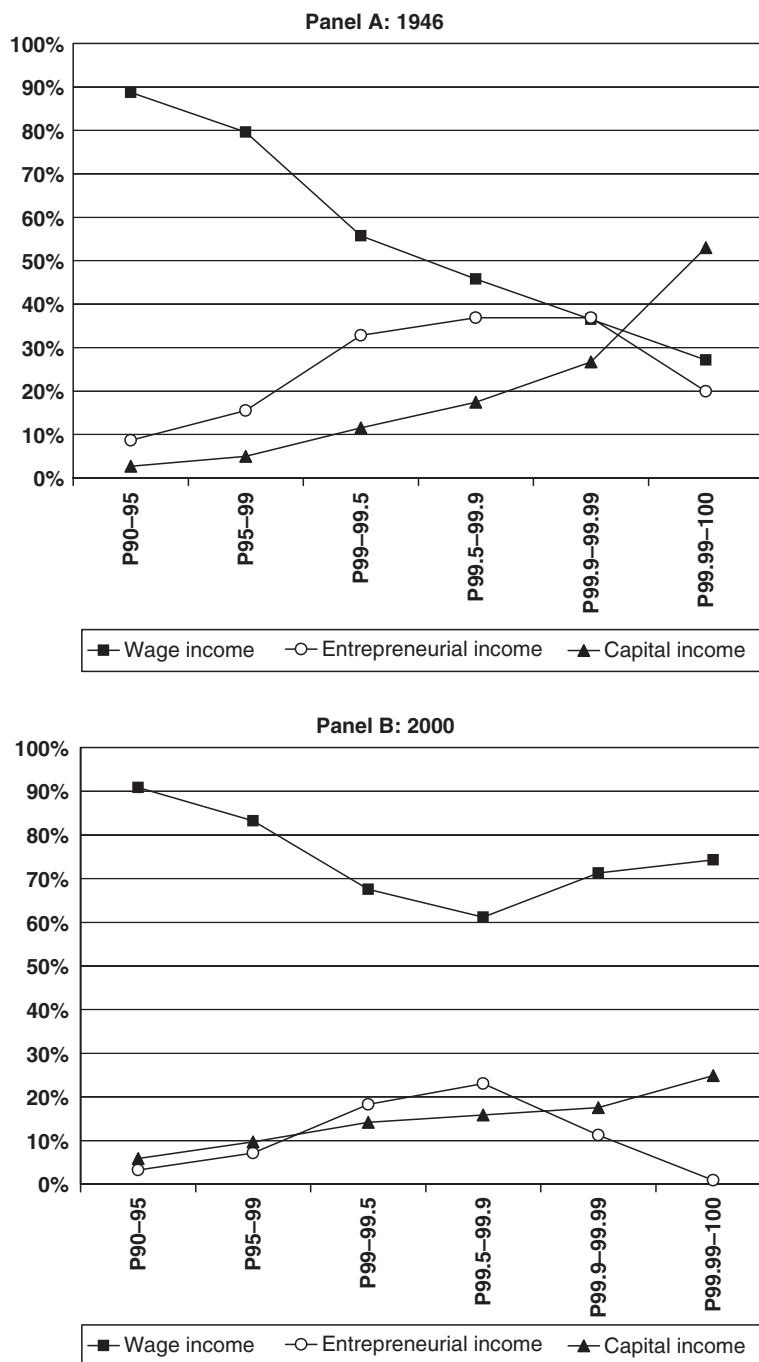
presents an inverted U-shape, and peaks for fractile P99.5–99.9. Thus, individuals in fractiles P90–95 and P95–99 rely mostly on labour income (capital income is less than 25% for these groups) while individuals in the top percentile derive most of their income in the form of passive capital income (mostly dividend and estate income). However, as was found in the occupation tables for 1942, even within the very top groups, wage and salary income remains important. In France and the United States at that time, the share of wages and salaries was much lower at the top than in Canada.

Panel B shows that the income composition pattern has changed significantly from 1946 to 2000. In 2000, the share of wage income has increased for all groups, and this increase is larger at the very top. Entrepreneurial income (professional and business income) has fallen sharply, especially at the top. The share of capital income (dividends, interest, and other capital income, excluding capital gains) has slightly increased below the top 0.5% and fallen significantly for the very top groups. Therefore, both the self-employed or small business owners in the bottom of the top percentile, and the capital income earners in the very top, have been in large part replaced by highly compensated employees.

Figure 6.7 shows the evolution from 1946 to 2000 of the share of wage income for various fractiles. The wage share for the groups P90–95 and P95–99 has always been large (around 90% and 75% respectively). However, the wage share within the very top groups has steadily increased over the period. For example, the wage share in the top 0.1% has doubled from 34% to 72% over the period. Interestingly, there has been a reversal in the level of shares between the groups within the

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**Figure 6.6** Income composition of top groups within the top decile in Canada, 1946 and 2000

Notes: Capital income does not include capital gains.

Source: Table C3, rows 1946 and 2000.



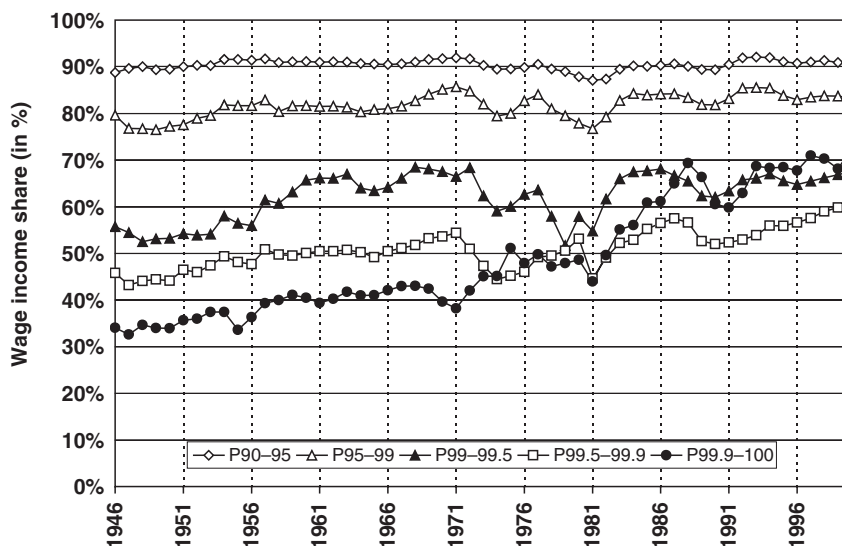


Figure 6.7 The share of wage income in upper income groups in Canada, 1946–2000

Source: Table C3, cols. P90–95, P95–99, P99–99.5, P99.5–99.9, and P99.9–100.

top percentile. In 1946, the share of wages was lowest at the top while in 2000, the share of wages (within the top percentile) is higher for the top 0.1% group than for groups P99–99.5 and P99.5–99.9. In 2000, more than two-thirds of incomes reported by the top 0.01% individuals is composed of wages and salaries, showing that the working rich have become the main group at the very top and have to a large extent displaced individuals with large capital incomes.

Finally, two facts show that the decline of the share of capital income for the top 0.5% reflects a fall in large capital holdings (relative to the average) rather than a decline in the aggregate capital income in the economy. First, the share of capital income actually increases for the groups P90–95, P95–99, and P99–99.5, showing that top capital income earners have indeed lost relative to the other groups. Second, Panel B of Figure 6.4 shows clearly that the share of capital income and dividends in personal income from the National Accounts is not lower in 2000 than it was in the pre-war period. We saw earlier that top income shares have increased dramatically over the last 20 years in Canada, and that this increase was concentrated within the top 1%. At the same time, we have shown that the share of wages has also increased dramatically for groups within the top 1%. Therefore, there is a strong presumption that the recent upturn in top shares is the consequence of an unprecedented surge in the pay of the top compensated employees. In order to cast direct light on this issue, we analyze in the following section the top of the wage income distribution since 1972.

AQ4

## 6.4 UNDERSTANDING THE SURGE IN TOP INCOMES IN RECENT DECADES

### **The Recent Surge in Top Wages and Salaries**

The microfiles of tax returns, available from 1982, allow a detailed analysis of the wage income distribution where wage income is taken as the employment income of both wage and salary earners. We supplement these with extrapolations based on composition tables published for the years 1972–81 to estimate top wage shares by computing the share of total employment income accruing to various upper groups of the wage income distribution since 1972. Our top groups are now defined relative to the total number of individuals with positive wages. Table 6D.1 reports the total number of wage earners, the total wages reported, and the average wage per wage earner for the period 1972–2000. Table 6D.2 reports top wage income shares series for the same period and Table 6D.3 presents the average wage income and the income threshold for each fractile. We also report in Tables 6D.1, 6D.2, and 6D.3 the same statistics computed at the family level (instead of the individual level) for the period 1982–2000.<sup>15</sup>

Figure 6.8, Panel A displays the share of wages accruing to the P90–95, P95–99, and the top percentile of the wage income distribution. (We begin this figure in 1972 using extrapolations based on composition tables published for the 1972–81 period.) Our top groups are now defined relative to the total number of individuals with positive wage income. It shows that, exactly as with the total income shares, the increase is concentrated within the top percentile. The shares of P90–95 and P95–99 are almost flat while the P99–100 share doubles from around 5% in the late 1970s to over 10% in 2000. This extreme concentration probably explains why this dramatic increase in wage inequality has remained unnoticed in the literature on inequality in Canada. Survey data, on which almost all wage inequality studies in Canada have been based, do not allow analysis of the top percentile because of the top coding of reported earnings and because there are very few individuals in the top income groups. Therefore, this evidence shows that the surge in top wages led to a drastic shift in the composition of top incomes away from capital income and toward labour income, as well as to a dramatic increase in top income shares.

The fact that the rise in top wage shares is so concentrated is a problem for the simple skill-biased technology explanation. It suggests rather that the change in inequality is driven by a change in the compensation practice for highly ranked officers and executives. The comparison with the United States (Chapter 5) is instructive. The United States experienced a similar (both in timing and magnitude) surge in top wage incomes. However, the surge in top wage shares

<sup>15</sup> It is possible to compute those statistics with the microfiles. Families are defined as married couples or single individuals. In that case, the top groups are defined relative to the total number of families (reported in Table 6D.1, column (2)) with positive wages and salaries. The US wage series of Piketty and Saez (Chapter 5) are also defined at the family level.

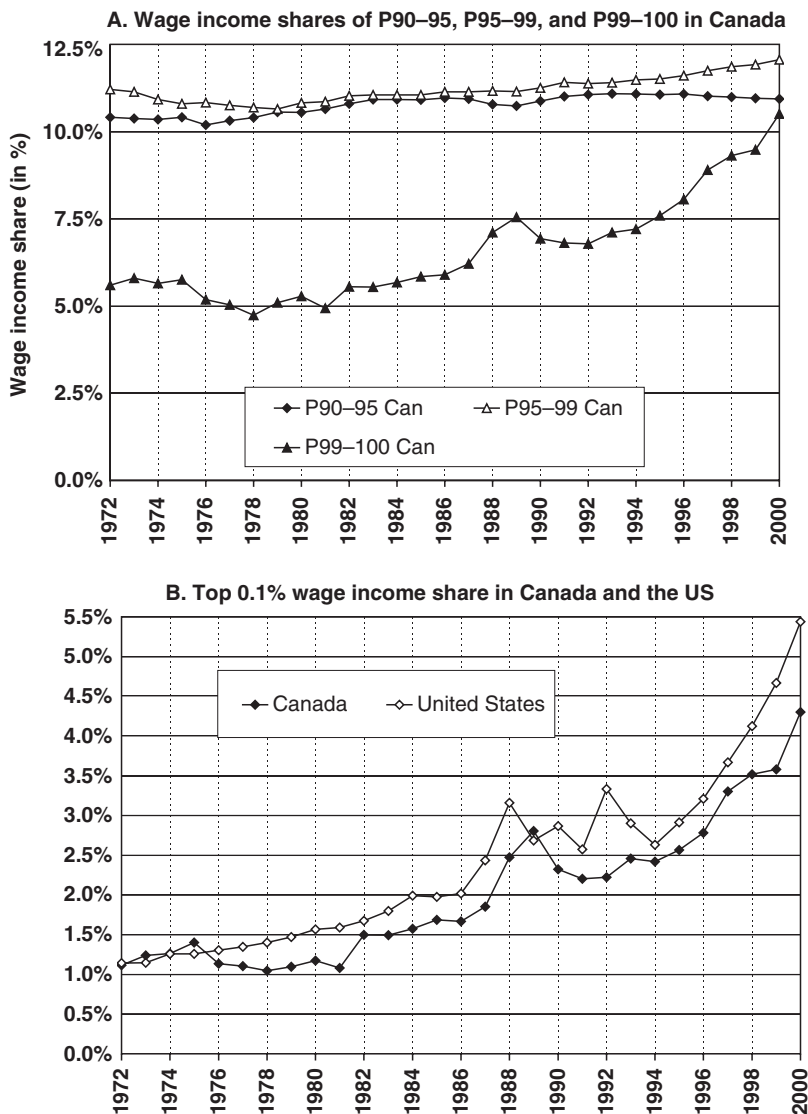


Figure 6.8 The top wage income shares in Canada, 1972–2000

Note: United States series are based on family earning while Canadian series are based on individual earnings.

Source: Table 6D.2, Panel A, columns P90–95, P95–99, P99–100, and P99.9–100. United States: Piketty and Saez (this volume).

in the United States started earlier (in the early 1970s), was not as concentrated as in Canada and was significant for the upper middle class P95–99 group as well. As a result, in contrast to the Canadian case, studies using survey data such as the Current Population Survey were able to document to a large extent the surge in

high wages (see Katz and Autor 1999; and Acemoglu 2002 for recent surveys of these studies in the United States).<sup>16</sup>

There seem to be two direct explanations for the similar patterns in the United States and Canada. The first explanation relies on the fact that the two economies have experienced very similar technological change and thus we should expect the distributions of earnings in both countries to follow a similar path. This explanation, however, is not very useful, without defining more precisely what is meant by technology. The second explanation for the parallel pattern at the top might be competition for highly skilled executives driven by the surge in executive compensation in the United States. Top salaries have increased enormously over the last three decades in the United States. Moreover, Canadian executives can relatively easily move and find jobs in the United States as part of what is sometimes called the brain drain. Therefore, the only way for Canadian firms to retain their best executives might be to increase their salaries.<sup>17</sup>

The brain drain threat explanation seems more convincing to us than the technology explanation for a number of reasons. First, European countries experienced the same change in technology as did Canada and the United States. However, a number of these countries, such as France (see Chapter 3) have not experienced an increase in inequality at the top of the wage distribution.<sup>18</sup> Second, if the migration threat explanation is true, then groups with higher mobility costs (or smaller benefits from moving) should experience a smaller rise in their compensation. Three pieces of evidence suggest that this is the case.

AQ5

First, the surge in inequality at the top is more concentrated in Canada than in the United States. The benefits from moving are clearly higher for the very top wage earners (who experienced the greatest increase in compensation in the United States, both in absolute and relative terms). Therefore, a model with fixed costs of moving would suggest that those at the very top in Canada are more likely to move than those in the upper middle class (below the top percentile). As a result, US driven competition should be stronger at the top, producing a more concentrated rise in inequality in Canada than in the United States, as we observed in the data. Finnie (2002) finds that international migration is in fact much more likely among those with high incomes.<sup>19</sup>

<sup>16</sup> Another very important difference between the United States and Canada is the pattern of inequality at the bottom. Low income earners have lost dramatically in the United States relative to Canada, explaining why overall inequality measures such as the Gini coefficient have increased much more in the United States than in Canada (see Blackburn and Bloom 1993; and Wolfson and Murphy 2000).

<sup>17</sup> Of course, this explanation does not help answering the question of why such a surge in top wages took place in the United States in the first place.

<sup>18</sup> British top income shares have increased significantly as well since 1980 (see Chapter 4), although less than in the United States or Canada. We expect higher mobility between the United Kingdom and the United States than between continental Europe and the United States.

<sup>19</sup> This is in contrast to the small and mixed income effects he finds for interprovincial migration (Finnie, 2004) but consistent with the bivariate comparisons in Graph 7 of Finnie (2001) where he reports that for 1996, 0.89% of Canadians with incomes in excess of CA\$150,000 migrated internationally, compared to an average for all incomes of 0.12%. See Zhao et al. (2000) for similar evidence.

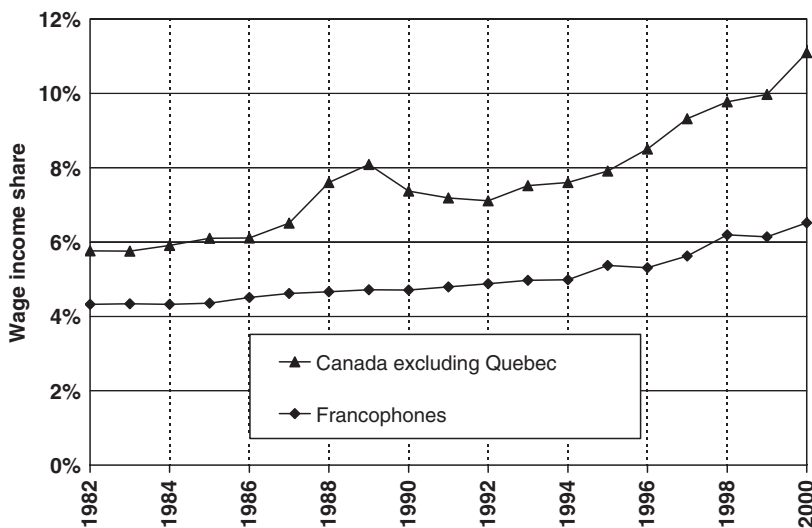
Second, the surge in top income shares started earlier in the United States than in Canada. Figure 6.8, Panel B displays the top 0.1% wage share for the United States (Chapter 5) and Canada since 1972. The top wage shares were very similar in the United States and Canada in the early 1970s. They started increasing almost ten years earlier in the United States and are slightly higher in the United States than in Canada today. Iqbal (1999) documents the brain-drain and notes that emigration of highly skilled Canadian workers to the United States increased during the 1980s and especially after 1995 when NAFTA (North American Free Trade Agreement) allowed high skilled workers to receive temporary work visa permits much more easily. The brain-drain pressures from the United States therefore correspond closely to the increase in top wage shares in Canada, suggesting that the latter might well have been driven by the former.

Third, the French speaking community in Quebec may be more reluctant to move to the United States because of language and perhaps also because of other cultural differences. Finnie (2002) finds that Quebec Francophones are much less likely to migrate internationally than residents of other provinces and than Quebec Anglophones. This is consistent with earlier research (Finnie forthcoming), which finds a similar pattern in interprovincial migration. As a result, we would expect brain-drain pressures to be weaker for Quebec Francophones than for others in Canada. Figure 6.9 displays the top 1% wage share for francophones in Quebec and for Canadians in all other provinces from 1982 to 2000.<sup>20</sup> Figure 6.9 shows indeed that the rise in the top 1% share has been much more modest for Francophones in Quebec (from about 4.5% to 6.5%) than for the rest of the provinces (from less than 6% to more than 11%). Complete series for each group within the top decile (reported in Table 6D.4) display similar patterns.<sup>21</sup> Even though top shares start at a higher level in 1982 for Canadians outside Quebec than for Francophones in Quebec, the increase in top shares from 1982 to 2000 is larger, even in relative terms, for the former group than for the latter. Interestingly, in contrast to Francophones, Anglophones in Quebec as a group experience a surge in top wage shares as in the rest of the provinces.<sup>22</sup> Therefore, this evidence is consistent with the brain drain threat explanation and would be more difficult to reconcile with the pure technological change explanation as we would expect technological change to spread very quickly from province to province in Canada.

<sup>20</sup> Francophones are defined as those who complete their income tax returns in French.

<sup>21</sup> Very top incomes have also increased significantly for Francophones (although much less than for non-Quebec residents). A model where Francophones have a higher fixed cost of moving than Anglophones on average would produce such results if the fixed cost (measured in dollars) is independent of income.

<sup>22</sup> Actually, the surge in top wage incomes for Anglophones is even larger than for the rest of the provinces. The top 1% share increases from less than 7% to over 14%. However, part of this change is due to the fact that the fraction of Anglophones within Quebec shrunk from 14.3% in 1982 to 11.5% in 2000. If lower income Anglophones left disproportionately, then we would expect the top shares of Anglophones to increase mechanically through a compositional effect.

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**Figure 6.9** The top 1% wage income share of Quebec Francophones vs. all filers from the rest of Canada, 1982–2000

*Note:* Francophones defined as those filing a tax return in French.

*Source:* Table 6D.4, Panels A and B, Column P99–100.

### Family vs. Individual Units

Canadian income taxes are assessed at the individual level whereas US income taxes are based on family income (as US married couples almost always file a joint return).<sup>23</sup> Thus Canadian top income shares based on individual income and US top income shares based on family income might not be comparable. (See Chapter 2 for a formal discussion of this issue.) This question is particularly important given the recent large increase in married women's labour force participation. The Canadian tax return micro-data allow us to link the incomes of spouses and explore this issue. Table 6D.2, Panel B reports top wage income shares estimated at the family level. Figure 6.10 plots the top 1% wage income share estimated at the individual level (as reported above) and at the family level (as in the United States) for 1982–2000. Both the level and pattern of the two graphs are almost identical suggesting that changes in the correlation of earnings among spouses have had no effect on top income shares. Given this Canadian evidence, it seems likely that the recent dramatic increase in family income concentration documented in the United States is also due primarily to an increase in individual income concentration.

<sup>23</sup> The Canadian personal income tax system in principle attributes capital income to the individual saver. Hence there are attempts to prevent tax evasion through transfers from high earning to low earning spouses.

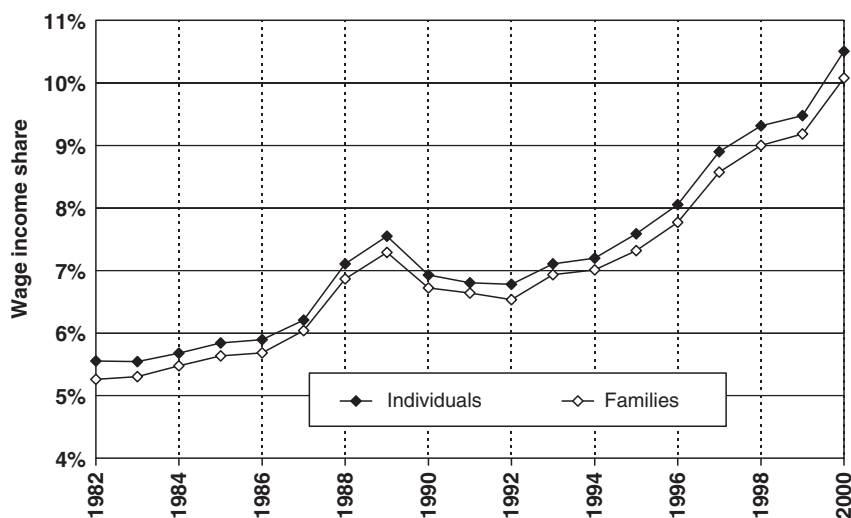


Figure 6.10 Top 1% wage income share for individuals and families in Canada, 1982–2000

Note: For families, top 1% defined relative to the total number of couples and single adults with positive wage income.

Source: Table 6D.2, Panels A and B, column P99–100.

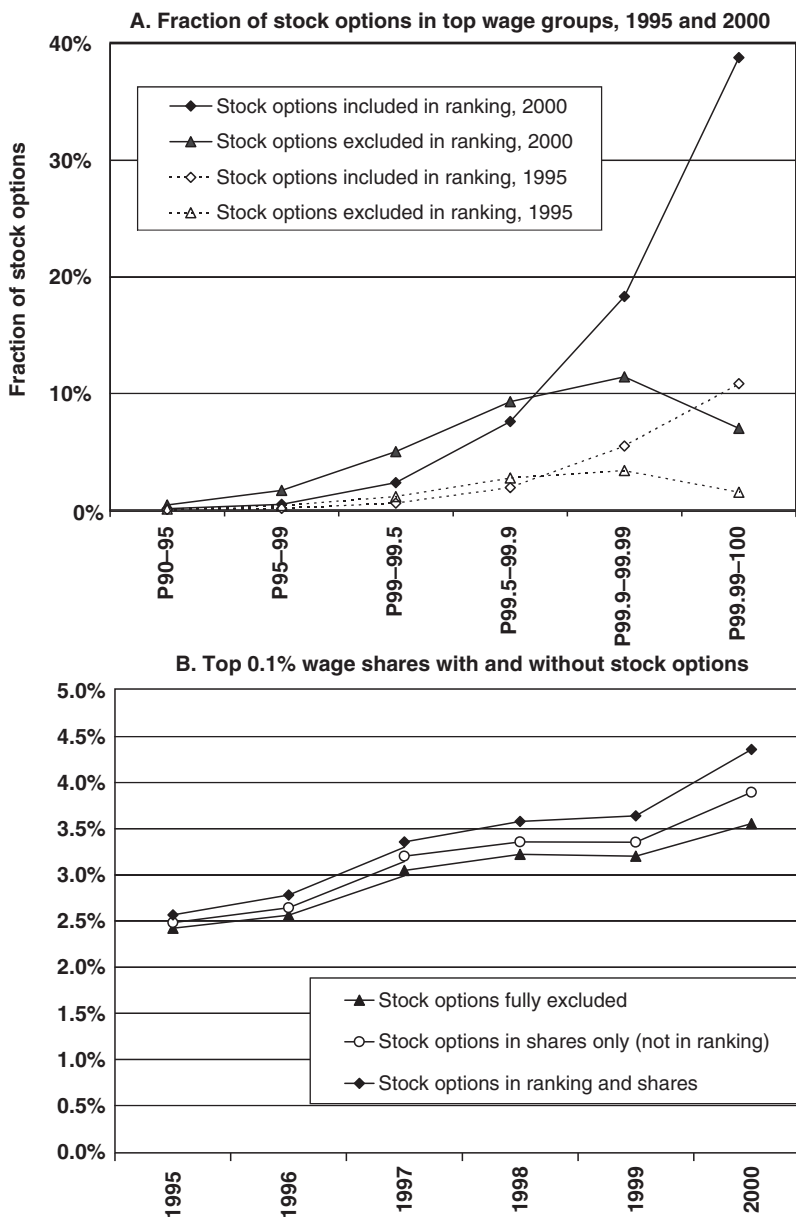
### The Development of Stock Options

The surge in top executive compensation in the United States is due in large part to the development of stock options. In Canada, the development of stock options has been slower because they do not receive a favored tax treatment (Klassen and Mawani 2000).<sup>24</sup> In contrast to the United States, profits from stock option exercises can be separated out from wages and salaries on Canadian income tax returns. In spite of the unfavorable tax treatment, evidence presented in Table 6D5 and Figure 6.11 shows the dramatic development of stock options since 1995.<sup>25</sup> Column (1) in Table 6D.5 shows that, in 1995, stock options represented only 0.26% of total employment income but this number has

<sup>24</sup> In the United States, profits from stock option exercise are treated like wage income (and hence are deductible from profits for the corporation and taxed like wage income for the individual). In Canada, stock options profits are not deductible for corporations and are in effect taxed very similarly to capital gains for most individuals upon exercise (but are fully reported and included in wages and salaries in the income tax statistics we have used). In effect, 75% of stock option exercise gains are taxable from 1990 to 1999 (50% before 1988, and 66.6% in 1988 and 1989). Over the course of 2000, the share of taxable stock-option gains was reduced to 50%.

<sup>25</sup> Published statistics in *Taxation Statistics* on aggregate stock options show that they represented less than 0.1% of total wages up to the year 1992. Hence stock options can clearly not explain the spike of 1987–89 when top wage shares increased by more than 1 percentage point. We present evidence only since 1995 because we have to rely on special computations prepared for this study directly by the Canadian Customs and Revenue Agency. Note also that one reason for the increase in the value of stock option exercises in the late 1990s is the increase in stock market prices at that time.

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**Figure 6.11** The role of stock options in the surge in top wage income shares in Canada, 1995–2000

Sources: For panel A: Table 6D.5, Panels A and D, rows 1995 and 2000. For Panel B: Table 6D.2, Panel A, col. P99.9–100, and Table D5, Panels B and C, P99.9–100.



increased to about 1.5% by 2000. Panel A in Table 6D.5 reports the fraction of the value of stock option exercises in total wages reported by top wage income groups (those fractions for years 1995 and 2000 are also depicted in Panel A of Figure 6.11). The evidence shows that the fraction of the value of stock option exercises in total wages reported by top wage groups has also increased dramatically since 1995. For example, the fraction of stock options in wages reported by the top 1% of wage earners increased from 3.3% in 1995 to over 13.5% in 2000.<sup>26</sup> It is also interesting to note the extreme concentration of stock options in the earnings distribution: the top 0.1% of wage earners exercise about two thirds of all stock options in each of the years from 1995 to 2000.

It is important to note, however, that stock options, like realized capital gains, are not an annual flow of income. As a result, top income and wage shares produced by ranking taxpayers including stock options might be upward biased as those with stock options have incomes that are unusually high in that particular year. As Canadian tax statistics report separately the value of stock option exercises, we can cast light on this phenomenon.<sup>27</sup> We can first re-compute top wage shares by excluding exercised stock options (both in the numerator and denominator). These top wage shares excluding stock options are reported in panel B of Table 6D.5. However, stock options do represent compensation for labour services and excluding them completely leads to an underestimation of top employment income shares. Therefore, the most satisfactory way to proceed is perhaps to exclude stock options in the ranking of individuals but add back stock options (both in the numerator and denominator) when computing shares. This method eliminates the upward bias due to lumpiness of stock option exercises while taking into account stock options. The top wage shares computed in this way are reported in Panel C of Table 6D.5 and the fraction of stock options for each group (groups defined by ranking of employment income excluding stock options) is reported in Panel D. The salient findings of Table 6D.5 are illustrated in Figure 6.11. Panel A of Figure 6.11 shows that the fraction of stock options in employment income is much lower when individuals are ranked by employment income excluding stock options. Even in 2000, the fraction of stock options is only around 10% for the top wage groups when ranked excluding stock options. Interestingly, the share of stock options peaks for group P99.9–99.99 and decreases at the very top. This is in stark contrast with the case where stock options are included in ranking. In the latter case, the share of stock options is steadily increasing as we move up toward the top. This shows that there is substantial re-ranking when stock options are excluded.<sup>28</sup> The

<sup>26</sup> It is therefore very likely that stock options in the United States, which receive a more favourable tax treatment than in Canada, also represent a large share of wages and salaries reported at the top.

<sup>27</sup> Such an analysis is unfortunately impossible for the United States where stock option exercises are never reported separately in tax or earnings statistics.

<sup>28</sup> The dotted lines in Panel A of Figure 6.11 show that the same phenomenon was present in 1995 even though stock options were a much smaller fraction of employment income, suggesting that the distributional characteristics of stock options have not changed much from 1995 to 2000, in spite of a dramatic increase in volume.

concentration of stock options, while still substantial, is less extreme when individuals are ranked excluding stock options. The top 1% wage earners (ranked excluding stock options) exercise about two-thirds of stock options.

Panel B of Figure 6.11 depicts the top 0.1% of wage income shares for the three treatments of options we discussed (fully included as in our previous analysis, included in shares but not in ranking, and fully excluded) from 1995 to 2000. As expected, the increase in the top 0.1% wage share is not as dramatic when ranking excludes stock options and even less so when stock options are completely excluded. However, the general pattern shows a steady increase in all three cases. Since 1978, the top 0.1% share would have increased by a factor of 3.5 if stock options were completely excluded instead of by a factor of 4.3 with stock options fully included. When stock options are included only in shares and not in ranking (perhaps the most meaningful economically), this factor is 3.85. Therefore, it is clear that the development of stock options can only explain a small fraction of the rise in top wage shares although it can explain a larger fraction of the surge since 1995. In any case, the re-ranking due to lumpiness in stock option exercises is only a minor element contributing to the surge in Canadian top wage shares over the last 25 years that we documented.

### Mobility

Has the surge in top incomes been accompanied by an increase in mobility for the high income groups? Using 1982–2000 longitudinal tax return data, we explore this issue in two ways. First, we recompute top income shares based on average income over three or five years instead of a single year. If high incomes were relatively transitory, we would expect to see less concentration when incomes are measured over a longer time period. Those income shares are reported in Panel A of Table 6E.1. Figure 6.12, Panel A plots the top 0.1% income share using one year, three year and five year centred averages. The three curves match almost perfectly suggesting that income mobility has not increased significantly in recent years.

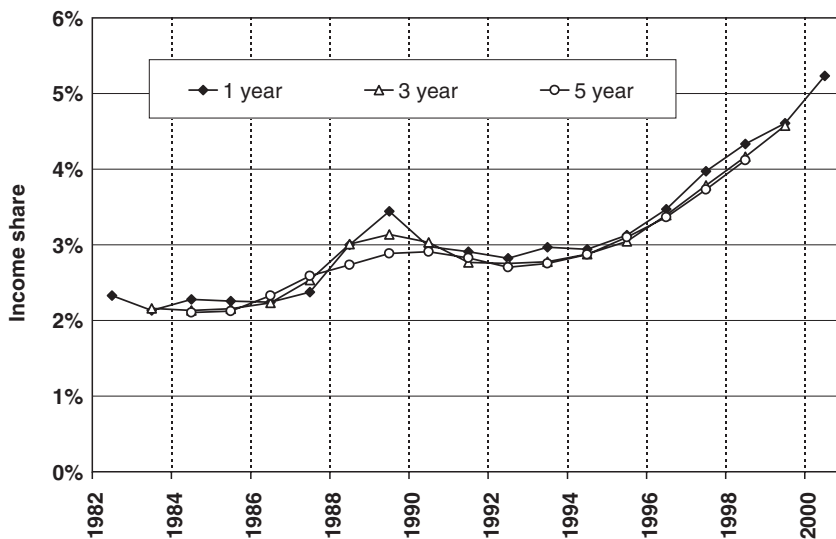
Second and more directly, Panel B reports that the probability of remaining in the top 0.1% group is about 60% one year later, about 50% two years later and between 40% and 50% three years later (such series for various top income groups are reported in Panel B of Table 6E.1). This suggests that mobility at the top is quite modest. Consistent with our Panel A results, there has been no increase in mobility since 1982, and perhaps even a slight decrease. Similar results apply to all top groups and strongly suggest that the surge in annual income concentration that we have documented is associated with a similar increase in longer term income concentration and welfare.<sup>29</sup> From the Canadian findings, it

<sup>29</sup> More generally, Baker and Solon (2003) and Beach et al. (2003) have used tax based data to conclude that the overall increase in annual earnings inequality in Canada was not due to increased earnings variability, although they do not consider top incomes specifically.

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**A. Top 0.1% Income share, centered averages over various years**



**B. Probability of staying in top 0.1% group**

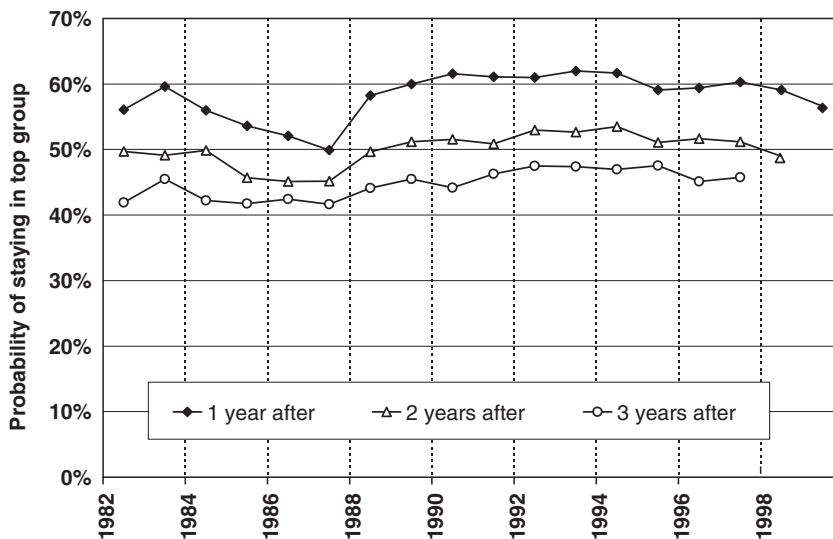


Figure 6.12 Mobility of high incomes in Canada, 1982–2000

Source: Table E: Computation details in Appendix Section E.

seems plausible that the surge in top US incomes is also not primarily due to increased mobility.<sup>30</sup>

## 6.5 THE ROLE OF TAXATION

As the empirical literature on behavioural responses to taxation has shown, income taxes can have a substantial impact on incomes reported for tax purposes, on which our top income and wage shares are based. Therefore, it is important to analyze, in parallel to the evolution of top income shares, the evolution of the income tax system. One key measure of the burden of the income tax system is given by the marginal rate of taxation. Such rates, at various percentiles of the income distribution, along with the top marginal tax rate, are reported in Figure 6.13 from 1920 to 2000.<sup>31</sup> A number of interesting findings emerge.

First, up to the early 1970s, the income tax in Canada had a very progressive structure, with many brackets and a very high top marginal income tax rate. However, the top marginal tax rate is a very imperfect measure of the burden of taxation, as extremely few taxpayers had incomes large enough to be in the top bracket. For example, in the early 1920s, the top marginal tax rate was in excess of 70% but the taxpayer at percentile P99.99 (approximately the 500th highest income in Canada at that time) faced a much more modest marginal rate of about 25%. Over the last 30 years, the top marginal tax rate has declined significantly to around 45–50%, but, in the year 2000, a significant fraction of the population—around 5%—faced the top rate.<sup>32</sup>

Second, the upper middle class below the top percentile (from P90 to P99) has faced a continuously rising marginal tax rate (except the temporary surge of the Second World War), from negligible rates before the Second World War, to rates around 20% in the decades following the Second World War, up to around 35–45% in the last two decades. In comparison, percentile P99.9 faced a rate of about 45% in 1950 and about 48% in 2000. Over that same 50 year period,

<sup>30</sup> Because of lack of adequate data, top income mobility in the United States has not been examined in published work. However, a number of studies (e.g., Gottschalk 1997; and Buchinsky and Hunt 1999) have used survey data to find more generally that the increase in measured US inequality is not due to increased mobility. Bowlus and Robin (2004) use a lifetime model of wage/employment mobility to conclude that the US distribution of lifetime labour income has become more unequal over the last 20 years.

<sup>31</sup> In Canada, provincial income taxes represent a very significant portion of total income taxes. Therefore, Figure 6.13 displays marginal tax rates including both the federal and provincial income taxes (see Appendix 6F for details). Complete series on marginal and average income tax rates are reported in Tables 6F.1 and 6F.2 respectively.

<sup>32</sup> This evolution from many brackets extending very far into the distribution of incomes and a high nominal top rate toward a much smaller number of brackets with a lower top rate is a common pattern of most personal income tax systems of developed countries over the twentieth century. Income tax systems in the United States, and the United Kingdom, among many others, have also followed the same path. It is an interesting political economy question as to the reasons for this change.

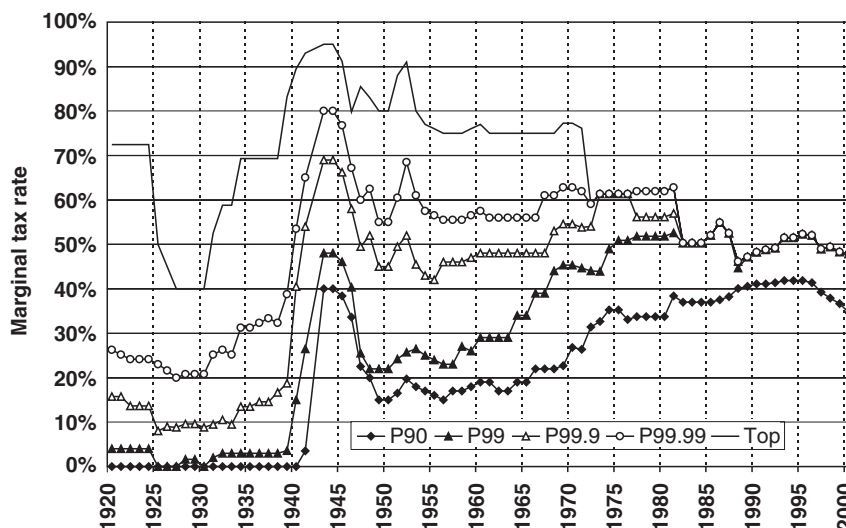


Figure 6.13 Marginal income tax rates in Canada for various percentiles, 1920–2000

Note: Year 1942 excluded because rates were reduced due to transition to a pay-as-you-earn system

Source: Table F1, cols. P90, P99, P99.9, P99.99, and Top.

percentile P99.99 experienced a decline from 55% to 48% and only the super top (around 1000 individuals within the top 0.01%) had a decline in marginal tax rates of 10 percentage points or more. This stands in contrast to the US case where a much larger fraction of taxpayers experienced very large reductions in marginal tax rates from the 1960s and 1970s to the early 1990s.

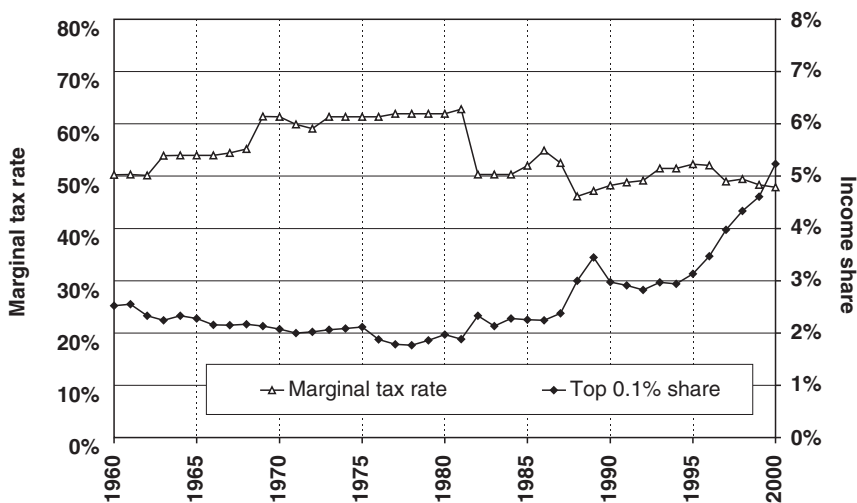
For the United States, a number of studies have argued that the surge in top US incomes in the 1980s might not reflect actual income changes but rather changes in the way incomes are reported (see Saez 2004 for a recent survey). For example, a large fraction of the jump in US top income shares from 1986 to 1988 (see Figure 6.3) is due to shifts from the corporate sector to the personal sector (as the top personal tax rate became lower than the corporate tax rate after 1987). The Canadian experience casts new light on this issue in two ways.

First, the climb in Canadian top reported incomes is unlikely due to tax induced shifting from the corporate sector. Canadian corporate tax rates remained relatively stable until 1987, have since declined and in any case are offset in the personal income tax by a dividend tax credit which reduces the double taxation of dividends. Also, in contrast to the United States, for the Canadian top 0.01% income earners, the share of business income reported on personal income tax returns as a percentage of total income reported has been relatively stable and very low, between 1% and 3% of total income over the last twenty years (see Table 6C.3).

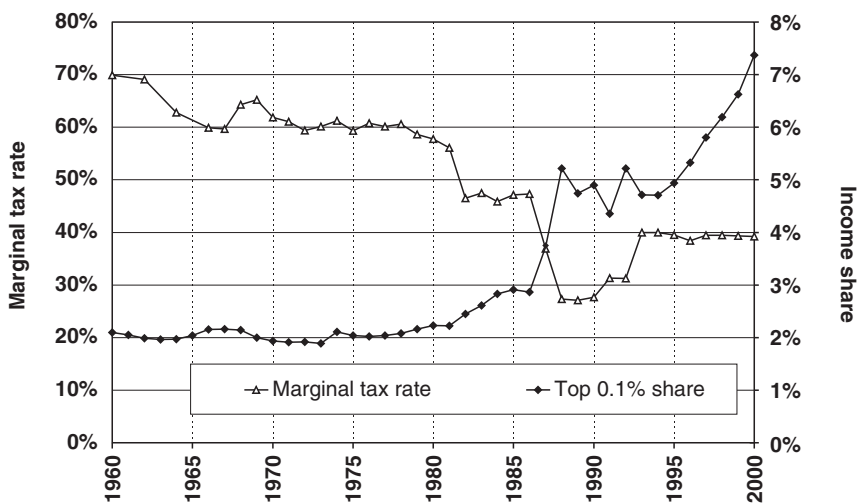
Second, Canadian changes in marginal tax rates have been different in both timing and degree. Figure 6.14 presents for 1960–2000 the average marginal

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**A. Canada (including Ontario Provincial Tax)**



**B. United States (excluding state income taxes)**



**Figure 6.14** Marginal tax rates and income share for the top 0.1% in Canada and US, 1960–2000

*Notes:* Marginal tax rates in Canada include federal and Ontario provincial income taxes, as well as applicable surtaxes and credits. United States, Saez (2004) computations using micro-tax return data and TAXSIM calculator (does not include state income taxes).

*Source:* Canada marginal tax rate computations based on Table F1 (see Appendix Section F for details).

personal income tax rate (weighted by income) for those in the top 0.1% along with their income share, for Canada in Panel A, and the United States in Panel B (from Saez 2004). While marginal tax rates for the top 0.1% are about the same (around 50%) in the 1960s and the 1990s in Canada, US marginal tax rates dropped dramatically from about 70% in the early 1960s to less than 30% in the mid-1980s (and then increased to around 40% in the 1990s).

It is clear from Figure 6.14 that the US top 0.1% income share surge has so far been larger. There is perhaps also some indication that Canadian top shares started to increase during the 1980s at the time of some significant Canadian marginal tax rate cuts, although some of the effect was temporary (see below). But it is striking that between 1990 and 2000, top shares surged very similarly in both countries, particularly after 1995. This occurred even though there was very little further change in Canadian marginal tax rates facing these top income individuals and even though there was a substantial increase in the relevant US marginal personal income tax rates in 1993 (as emphasized by Piketty and Saez, Chapter 5 in this volume). Therefore, the dramatic climb in Canadian top reported incomes is unlikely to have been induced by changes in Canadian tax rates. If, as tentatively argued previously, some of the surge in Canadian top incomes is due to brain drain threats (or there is some other association with US factors), it must be the case that the surge in top US wage incomes is real and not entirely due to changes in the way US incomes are reported for tax purposes. Otherwise, those changes in the United States could not have increased incentives for Canadian top earners to move to the United States.

There are other things to learn from the Canada/United States comparison in Figure 6.14. First, as noted, there is clear evidence in Canada, as in the United States, of a short-term response to cuts in marginal tax rates. For example, there was a substantial tax cut in Canada in 1988 and Panel A shows a sharp increase in the 0.1% share between 1987 and 1989, which is partially reversed by 1990. Several other figures show similar spikes and it is particularly clear in the top wage series in Figure 6.8. This suggests that this short-term response was at least in part highly compensated employees shifting some of their compensation into the lower tax rate years. Goolsbee (2000) found similar effects for the US tax increase of 1993. Sillamaa and Veall (2001) analysed the Canadian tax cut of 1988 by comparing incomes in years 1986 and 1989. Consistent with our results, they found significant and large elasticities for high-income groups. However, our top share series shows that their elasticity estimates capture the short-term spike response but likely overstate the long-run response to the tax change.<sup>33</sup>

In order to test more formally that top income share movements in Canada are primarily due to US developments rather than to changes in marginal tax rates in Canada, we estimate simple regression models of the form:

<sup>33</sup> Sillamaa and Veall (2001) use four years of the same micro-data set used as part of this study. They find much lower tax responsiveness for low income groups, consistent with the US findings of Gruber and Saez (2002). Gagné et al. (2000) use provincial level aggregate data over 1972–96 and find a large tax responsiveness for high income individuals, but only for the 1988–96 period.

$$\text{Log}(\text{TOP1\% SHARE}_t) = \alpha + \varepsilon \text{Log}(1 - \text{MTR}_t) + \delta \text{Log}(\text{TOP1\%SHAREUS}_t) + v_t$$

where  $\text{TOP1\%SHARE}_t$  is the share of income received by the top 1% of earners in Canada in year  $t$ ,  $\text{TOP1\%SHAREUS}_t$  is the equivalent US variable and  $\text{MTR}_t$  is the average (income weighted) marginal tax rate applicable to the top 1% group in Canada in year  $t$ . (We also estimate the corresponding regression for the top 0.1% share.) The central parameter is  $\varepsilon$ , the elasticity of top reported incomes (as a share of all reported incomes) with respect to the net of tax rate (defined as one minus the marginal tax rate). See Saez (2004) for a discussion of identification assumptions.

Results for these time series regressions are reported in Table 6.2. The Newey-West procedure (with 8 lags) is used to correct the standard errors for possible heteroskedasticity and serial correlation. Panel A focuses on incomes for the full period 1920–2000 while Panel B focuses on wage incomes for the recent period 1972–2000. Columns (1) and (2) report results for the top 1% and columns (3) and (4) for the top 0.1%. Columns (1) and (3) exclude the US share variable. In that case, the estimated elasticities of income shares with respect to net of tax rates are around 0.8–1 for incomes and around 2.5–3 for wage incomes for the recent period. The reason these elasticity estimates are so enormous is that the entire surge in top wage income shares is attributed to the very modest decrease in Canadian marginal tax rates since 1972. Columns (2) and (4) use the full regression model with the log US income share as an additional independent variable. This has a dramatic effect on the estimated tax elasticities which drop to around 0.3–0.5 for incomes and around 0.2–0.3 (not significantly different from zero at the 5% level) for wage incomes. The coefficient on the US log income

**Table 6.2** Marginal tax and US effects on Canadian top income shares, 1920–2000

	Top 1%		Top 0.1%	
	No US control	US control	No US control	US control
	(1)	(2)	(3)	(4)
<b>A. Income Shares from 1920 to 2000</b>				
Elasticity	0.826 (0.126)	0.476 (0.130)	0.961 (0.294)	0.299 (0.168)
log (US top income share)		0.458 (0.093)		0.610 (0.101)
Number of Observations	81	81	81	81
<b>B. Wage Income Shares from 1972 to 2000</b>				
Elasticity	2.550 (0.762)	0.177 (0.345)	3.023 (0.544)	0.278 (0.258)
log (US top income share)		0.759 (0.175)		0.857 (0.059)
Number of Observations	29	29	29	29

*Notes:* Estimates obtained by time-series regression of log (Canadian top income share) on a constant, log (1 - Canadian marginal tax rate). Results are from OLS regressions with standard errors corrected for heteroskedasticity and autocorrelation using the Newey-West procedure with 8 lags. In col. 2 and 4, log (US top income share) is added as an additional right-hand side variable. Appendix Section F describes how the marginal tax rate series are estimated.



share is large and very significant and would imply that a 10% increase in the top US wage income share leads to a 8% increase in the top Canadian wage income share. Even if we do not accept such a causal interpretation, the results reinforce our informal analysis and make it clear that Canadian top income changes are much more strongly associated with similar US changes than with Canadian tax developments. This in turn is evidence that US changes are more than changes in US tax reporting behaviour.

## 6.6 CONCLUSION

This chapter has used personal income tax data to construct homogeneous series of top income shares in Canada over the course of the twentieth century. A number of important findings have emerged. First and most striking are the close parallels between the patterns and composition of top incomes in Canada and the United States. Both countries experienced a sharp drop in top shares during the Second World War with no recovery before the 1970s. However, during the last two decades, the top groups have largely recovered their pre-war levels. Interestingly, this recent increase in income concentration has not been associated with increased mobility at the top of the income distribution in Canada. Moreover both countries have experienced the same shift in the composition of top incomes. Today earners of employment income have, to a large extent, replaced rentiers at the top of the income distribution in both Canada and the United States.

The Canadian experience may help us understand the role of taxation in explaining the recent increase in top income shares in the United States. Although the drop in marginal tax rates since the 1960s has been much more modest in Canada than in the United States, the surge in top incomes has been almost as large in Canada as in the United States. The analysis of top Canadian incomes is more transparent because it is not plagued with shifts between the personal and corporate sectors, which have made the US results more difficult to interpret. Moreover, the concentration of the surge in the last decade and among only the very top income shares suggests that tax changes in Canada cannot be the sole cause. While clear evidence of short-term responses to taxation can be found in Canada, it could be very misleading to equate such responses to the permanent long-run effects of tax changes.

The surge in top wages in Canada is later and more concentrated within very top groups than in the United States and is much less pronounced for francophones in Quebec. We suggest that this is some evidence in favour of a brain drain explanation: the threat of migration to the United States by highly skilled Canadian executives or professionals may have driven the surge in top wage shares in Canada. This would be consistent with the smaller surge found for the United Kingdom (Chapter 4) and the lack of a surge in France (Chapter 3). These international differences are difficult to reconcile with a simple skill bias technological explanation. In any case, the relationship between the Canadian and US surges suggests strongly that the latter cannot be the consequence of changes in

the way US incomes are reported for tax purposes. The remaining puzzle is why such a surge took place in the United States in the first place.

## APPENDIX 6A

The appendices describe the construction of our top income share series based on tax return data. The Canadian federal income tax started in 1917 and 2000 is the most recent year for which data are available. Starting with the tax year 1920, the Taxation Division of the Department of National Revenue started publishing distributions of taxpayers. These statistics for years 1920–40 were published in *The Canada Yearbook* (Dominion Bureau of Statistics) and in *Incomes Assessed for War Income Tax in Canada* (Department of National Revenue) and in *Dominion Income Tax Statistics* (Department of Trade and Commerce). Many of these statistics, as well as a detailed overview of the income tax legislation for these years, are reproduced in *Canadian Fiscal Facts* (Canadian Tax Foundation 1957). After the Second World War, a much broader set of statistics was published in the annual publication *Taxation Statistics* (Canada Customs and Revenue Agency) covering the years 1948 to 2001. Finally, micro-files of tax returns, based on a 20% random sample of the Canadian population, are available from 1982. This micro-dataset of tax returns is known as the Longitudinal Administrative Databank (LAD). The microfiles allow the computation of a much broader set of inequality statistics than the published tables. Aggregate population and National Account statistics are from CANSIM (2003) (Canadian Socio-economic Information Matrix) as maintained by Statistics Canada.

### Total Number of Individuals

The total number of individuals is computed as the number of individuals in the Canadian population aged 20 and above. These series are based on Census interpolations and provided by CANSIM. CANSIM provides two series for the size of population, one from 1920 to 1971 and a second one from 1971 to 2000. We paste these series using the recent series as the base. The series is reported in Table 6A.1, column (1). Upper income groups are defined with respect to this total adult population. For instance, in 2000, with a total adult population equal to 22.81 million, there are 2.281 million individuals in the top decile, 228,100 individuals in the top percentile, etc.

Table 6A.1 also indicates the total number of tax returns actually filed (column (2)), as well as the fraction of the adult population filing a tax return (column (3)). Before the Second World War, due to the high exemption levels, this fraction was low, usually around 5%. The top 5% is therefore the biggest fraction for which we can construct homogeneous estimates for the entire period. We can provide estimates for the top decile only after 1941. Exemptions were drastically reduced during and after the Second World War, and therefore the fraction filing has

Table 6A.1 Reference totals for population, income, and inflation in Canada, 1920–2000

	Adult population			Income		Inflation	
	(1) Population (aged 20+) ( <sup>000</sup> s)	(2) Number of tax returns ( <sup>000</sup> s)	(3) (2)/(1) (%)	(4) Total income (millions 2000 \$)	(5) Average income (2000 \$)	(6) CPI (2000 base)	(7) Average tax per adult (2000 \$)
1920	4,990	290.6	5.8	24,852	4,980	11.894	66
1921	5,072	281.2	5.5	22,695	4,474	10.485	55
1922	5,163	239.0	4.6	25,751	4,987	9.604	50
1923	5,228	225.5	4.3	27,705	5,300	9.604	50
1924	5,321	209.5	3.9	27,890	5,242	9.427	49
1925	5,426	116.0	2.1	30,384	5,600	9.604	37
1926	5,528	122.0	2.2	32,859	5,944	9.604	40
1927	5,668	129.7	2.3	35,025	6,179	9.515	41
1928	5,810	142.2	2.4	37,612	6,474	9.515	47
1929	5,947	143.6	2.4	37,420	6,293	9.692	47
1930	6,074	133.6	2.2	35,413	5,831	9.604	46
1931	6,192	167.0	2.7	32,504	5,250	8.634	50
1932	6,317	204.0	3.2	29,525	4,674	7.841	58
1933	6,445	184.2	2.9	28,336	4,397	7.489	54
1934	6,564	199.1	3.0	31,210	4,755	7.577	69
1935	6,681	217.0	3.2	33,160	4,963	7.665	69
1936	6,786	237.1	3.5	34,830	5,132	7.753	75
1937	6,890	264.8	3.8	38,194	5,544	8.018	83
1938	6,999	293.1	4.2	38,455	5,494	8.106	75
1939	7,114	300.4	4.2	40,608	5,708	8.106	95
1940	7,229	608.4	8.4	45,386	6,278	8.370	259
1941	7,350	871.5	11.9	51,384	6,991	8.899	519
1942	7,492	1,781	23.8	62,802	8,383	9.251	591
1943	7,614	2,163	28.4	67,268	8,835	9.427	1,186
1944	7,730	2,254	29.2	73,222	9,473	9.515	1,138
1945	7,822	2,254	28.8	72,778	9,304	9.604	986
1946	7,971	3,162	39.7	72,031	9,037	9.868	840
1947	8,122	3,529	43.4	75,463	9,291	10.837	721
1948	8,266	3,662	44.3	76,991	9,314	12.335	648
1949	8,613	3,764	43.7	78,908	9,162	12.775	464
1950	8,758	3,892	44.4	81,691	9,328	13.128	510
1951	8,896	4,118	46.3	88,228	9,917	14.449	644
1952	9,129	4,413	48.3	93,889	10,285	14.890	776
1953	9,329	4,700	50.4	99,646	10,681	14.714	788
1954	9,548	4,834	50.6	99,091	10,378	14.802	747
1955	9,734	4,955	50.9	107,058	10,998	14.802	764
1956	9,911	5,188	52.4	117,008	11,806	15.066	824
1957	10,159	5,195	51.1	120,837	11,894	15.507	857
1958	10,352	5,516	53.3	123,403	11,920	15.859	800
1959	10,537	5,672	53.8	128,164	12,163	16.123	865
1960	10,700	5,851	54.7	132,743	12,406	16.300	934
1961	10,851	5,947	54.8	135,975	12,531	16.476	978

(contd.)

Table 6A.1 (Contd.)

	Adult population			Income		Inflation		(8) Average capital gain per adult (2000 \$)
	(1) Population (aged 20+) ( <sup>000s</sup> )	(2) Number of tax returns ( <sup>000s</sup> )	(3) (2)/(1) (%)	(4) Total income (millions 2000 \$)	(5) Average income (2000 \$)	(6) CPI (2000 base)	(7) Average tax per adult (2000 \$)	
1962	11,001	6,107	55.5	146,724	13,337	16.652	1,021	
1963	11,158	6,324	56.7	154,161	13,816	16.916	1,105	
1964	11,354	6,693	58.9	162,700	14,330	17.269	1,253	
1965	11,575	7,136	61.7	176,318	15,232	17.621	1,339	
1966	11,845	7,733	65.3	190,779	16,106	18.326	1,485	
1967	12,150	8,134	66.9	200,623	16,512	18.943	1,716	
1968	12,451	8,495	68.2	210,535	16,909	19.736	1,969	
1969	12,756	8,882	69.6	223,356	17,510	20.617	2,227	
1970	13,064	9,183	70.3	232,009	17,760	21.322	2,449	
1971	13,365	9,533	71.3	246,998	18,481	21.938	2,696	
1972	13,659	10,380	76.0	266,189	19,488	22.996	3,516	95
1973	13,983	11,004	78.7	289,654	20,715	24.758	3,700	142
1974	14,353	11,602	80.8	310,181	21,611	27.401	3,940	144
1975	14,737	12,002	81.4	324,154	21,996	30.396	3,909	181
1976	15,101	12,343	81.7	344,007	22,781	32.687	4,047	256
1977	15,454	12,586	81.4	351,688	22,757	35.242	3,998	284
1978	15,787	14,320	90.7	359,722	22,786	38.414	3,786	394
1979	16,129	14,682	91.0	372,951	23,123	41.938	3,970	605
1980	16,524	14,765	89.4	383,382	23,202	46.167	4,164	721
1981	16,919	15,179	89.7	403,154	23,829	51.894	4,324	540
1982	17,299	15,221	88.0	395,734	22,875	57.533	4,061	276
1983	17,654	15,303	86.7	389,172	22,045	60.881	3,819	379
1984	17,998	15,552	86.4	404,590	22,480	63.524	3,962	347
1985	18,321	15,864	86.6	421,517	23,007	66.079	4,196	468
1986	18,628	16,538	88.8	432,966	23,243	68.811	4,488	705
1987	18,966	17,071	90.0	446,054	23,518	71.806	4,868	1,075
1988	19,278	17,580	91.2	472,432	24,507	74.714	5,021	888
1989	19,690	18,132	92.1	489,777	24,875	78.414	5,416	1,102
1990	20,030	18,759	93.7	498,292	24,877	82.203	5,490	676
1991	20,313	19,051	93.8	478,939	23,578	86.784	5,221	611
1992	20,579	19,437	94.5	477,320	23,195	88.106	5,107	664
1993	20,843	19,829	95.1	475,314	22,804	89.692	5,055	1,017
1994	21,115	20,154	95.4	485,434	22,989	89.868	5,129	961
1995	21,394	20,515	95.9	497,433	23,252	91.806	5,240	507
1996	21,667	20,806	96.0	502,058	23,171	93.304	5,298	649
1997	21,971	21,124	96.1	515,341	23,455	94.802	5,470	839
1998	22,241	21,384	96.1	532,784	23,955	95.683	5,533	842
1999	22,517	21,882	97.2	547,416	24,312	97.357	5,611	867
2000	22,808	22,146	97.1	566,981	24,859	100.000	5,817	1,363

Notes: Population estimates based on census data, from CANSIM. Total income is 80% of personal income (less transfers) from National Accounts. Consumer Price Index (CPI) from CANSIM series. Average tax per capita includes both federal (and provincial) individual income taxes. Average capital gains per adult based on total capital gains (taxable and non-taxable) reported on tax returns since 1972. All details in Appendix Section A.

increased dramatically and is around 95% today. Note that the fraction jumps from 80 to 90% in 1978 due a change in the rule for family allowances, which required spouses, even without any income, to file in order to claim the allowances. As a result, in Canada today, almost every adult, even if his or her income is below the exemption thresholds, has an incentive to file an income tax return.

It is important to note that many individuals in the population have no income (before transfers). The biggest group with no income is non-working spouses. The size of this group has shrunk over the century as female labour force participation has steadily increased. This secular phenomenon tends to reduce the size of top income shares over time as income is spread over a larger fraction of the population.

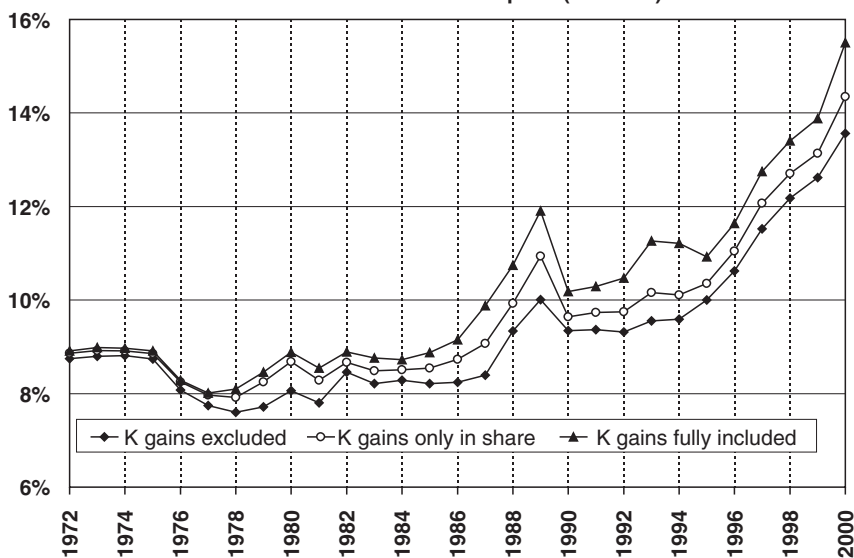
### Total Income Denominator

In order to compute top income shares, we need to estimate total income that would have been reported on tax returns, had everybody been required to file a tax return. We call this total income measure Gross Tax Income (GTI). As only a fraction of the population was filing a tax return in the pre-war period, income tax statistics cannot be used to estimate the Gross Tax Income denominator. The natural way to compute such a denominator is to use the personal income series from the National Accounts. Personal income is a broader definition of income accruing to individuals than total Gross Tax Income (had everybody been required to file) for two main reasons. First, personal income includes all transfers from the government (such as welfare benefits, unemployment benefits, or family allowances) and many of these transfers are either partially or not at all reported on tax returns. Therefore, we first subtract transfers from the government (reported separately in National Account series) from the personal income series. Second, various forms of income such as in-kind labour income, imputed rental income of home owners, imputed interest on non-interest bearing bank accounts, etc., are not reported on tax returns but are included in personal income. As a result, it is not surprising that personal income less transfers is systematically higher than Gross Tax Income even in the recent period where practically all income earners file a tax return. Fortunately, the ratio of GTI over Personal Income less transfers has always been around 80% (there are relatively minor fluctuations between 78% and 82% with no trend) since the mid-1970s, when most individuals, even low income earners, started filing tax returns systematically. Before the mid-1970s, because exemptions were larger (in real terms), a number of individuals with small incomes were not required to file tax returns and therefore the ratio of GTI over Personal Income less transfers was smaller (the ratio increased smoothly from 50% in 1945 to around 80% in 1974).

Presumably, a small fraction of individuals with very small incomes do not file tax returns (as total tax returns account for only 96% of the adult population in 2000). On the other hand, a number of individuals below age 20 also file returns. Therefore, we assume that GTI for the total adult population (age 20 and above) had everybody filed a return would be around 80% of Personal Income less

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**A. Income share of the top 1% (P99–100)**



**B. Income share of the top 0.01% (P99.99–100)**

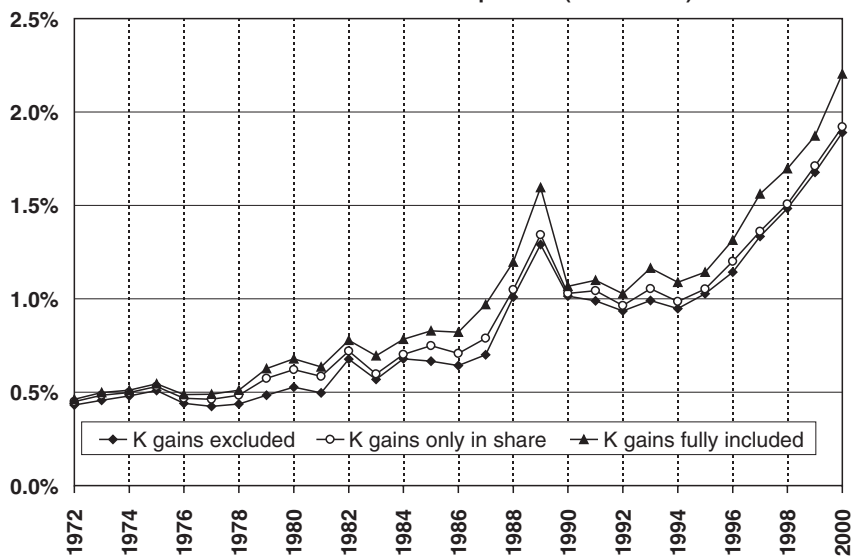


Figure 6A.1 Income shares with and without capital gains of top income groups in Canada, 1972–2000

Source: Tables B1 and B3, cols. P99–100 and P99.99–100.

transfers. Therefore, our total income denominator is defined uniformly over the period as 80% of Personal Income less transfers from the National Accounts.

The National Accounts provide series of Personal Income and Transfers only from 1926. Therefore, we have extrapolated the series of Personal Income (less transfers) for the period 1920–25 (from Urquhart and Buckley 1965), assuming that the ratio Personal Income over Gross National Product stays constant (and equal to 78% as in 1926). This assumption seems reasonable because the ratio Personal Income over GNP stays almost constant over the period 1926–39. Our total income denominator series (expressed in 2000 dollars) is reported in Column (4) of Table 6A.1. The average income per adult is reported in Column (5). The CPI index (base 100 in year 2000) is reported in Column (6).

(See Figures 6A.1, 6A.2, and 6A.3 for data on income shares and average income tax rates in Canada.)

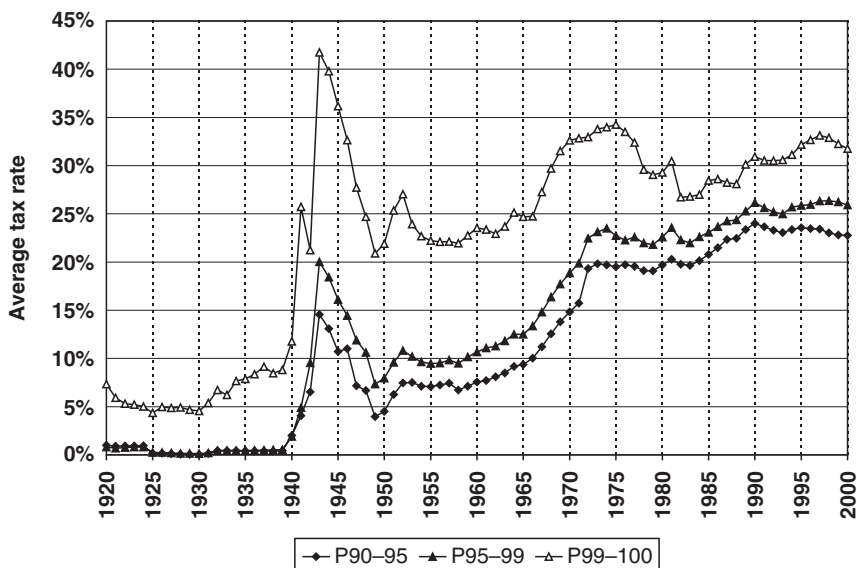
#### APPENDIX 6B: TOP INCOME SHARES

Our income definition includes all sources of income reported on tax returns (except government transfers). With the exception of realized capital gains, which became taxable in 1972 (see below), and various government transfers (that are always negligible in the top decile), the definition of incomes reported on tax returns has been very stable since 1920. Since the introduction of the income tax, taxpayers have had to report incomes from all sources: wages and salaries for those employed, pensions for retired employees, self-employment income for the self-employed such as doctors or lawyers, profits from sole proprietorships and partnerships for owners of unincorporated businesses such as farmers or retail store owners. Capital income such as interest income, royalties, rents from real estate (as stated above, imputed rent from home ownership was never considered as taxable income), dividend distributions for shareholders of corporations, estate and trust income, and investment income on capital invested abroad were always taxable.

Since 1972, realized capital gains have been partially taxable. From 1972 to 1987, 50% of such gains were included in taxable income. In 1988 and 1989, 66.6% of gains were included in taxable income. From 1990 to 1999, 75% of gains were included in taxable income. Finally, over the course of tax year 2000, the amount of gains taxable was reduced back to 50%. The later 2000 reform was enacted retroactively and may explain why we do not observe a notable surge in realized capital gains in year 2000.

Most of our series exclude capital gains completely. Tax returns are ranked by income excluding capital gains, and top fractile incomes exclude capital gains. Income shares were computed by using the total income series (Table 6A.1, column (4)), as described in Appendix 6A. However, to assess the sensitivity of our income series to the exclusion of capital gains, for the period 1972–2000, we have also constructed series including full capital gains (i.e., not only the fraction reported on tax returns but the full amount of realized gains). For those series, we rank tax returns by income including full capital gains, and we compute total

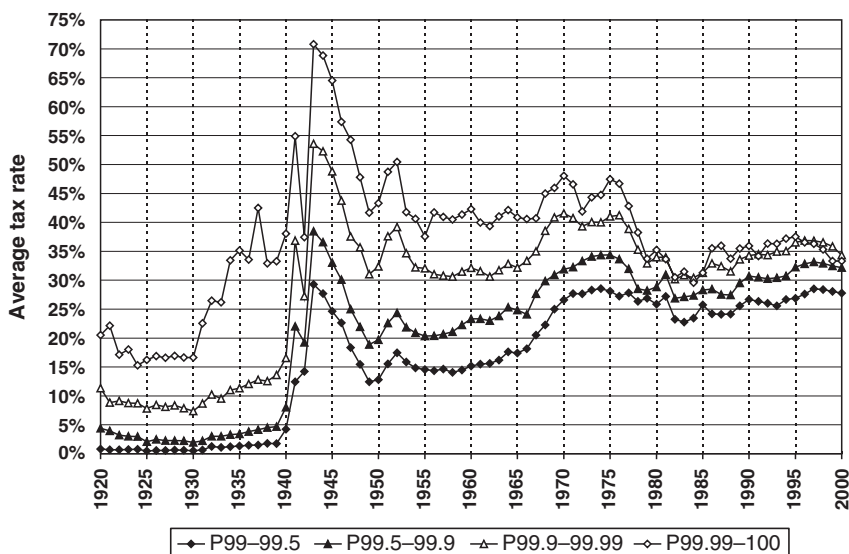
*The Evolution of High Incomes*



**Figure 6A.2** Average income tax rates in Canada within top decile, 1920–2000

*Notes:* Average tax rates based on net taxes (including deductions and credits) divided by gross incomes. In 1942 tax rate lower due to transition to pay-as-you-earn system.

*Source:* Table F2, cols. P90–95, P95–99, P99–100.



**Figure 6A.3** Average income tax rates in Canada within top percentile, 1920–2000

*Note:* Average tax rates based on net taxes (including deductions and credits) divided by gross incomes.

*Source:* Table F2, cols. P99–99.5, P99.5–99.9, P99.9–99.99, P99.99–100.



incomes (including capital gains) accruing to our top income groups. To compute income shares in that case, we add to the denominator described in Appendix 6A the full capital gains reported on tax returns.

In the text of this chapter, we have focused on series excluding capital gains because we cannot include capital gains before 1972. Excluding capital gains also allows getting rid of the very strong short-term volatility due to lumpiness in capital gains realizations. As a result, to analyse the role of capital gains, it is perhaps more useful to rank income excluding capital gains and see how much extra income accrues in the form of realized capital gains for each top income group. Therefore, we present three series. The first one (on which we focus in the text) excludes capital gains completely. The second series includes full capital gains both for ranking taxpayers and defining top income groups and in the amounts of income reported. The third series ranks taxpayers by income excluding capital gains (as in the first series) but adds back capital gains in the amount reported (both in the numerator and denominator) to compute top shares. The top fractile incomes series used to compute our top fractile income shares series are reported in real 2000 Canadian dollars in table B3 (for incomes excluding capital gains). For instance, Table 6B.3. indicates that the average top decile income was CA\$105,262 in 2000, and the top decile income share reported in table 6B.1 for 2000 (42.34%) can be computed by dividing CA\$105,262 by the average income reported in Table 6A.1 for 2000 ( $105,262/24,859=4.234$ ). The top shares series including capital gains for the period 1972–2000 are reported in Table 6B.2. Panel A reports the series where capital gains are included both in the ranking and the amounts while Panel B reports the series where capital gains are excluded for the ranking but added back to compute the income shares.

The top fractile income series reported in tables 6B.1, 6B.2, and 6B.3 were constructed as follows: for the 1982–2000 period, the series were computed directly from the LAD microfiles (the microfiles allow us to rank tax returns by income excluding capital gains or by income including full capital gains and to compute average incomes without capital gains or with full capital gains for each of our top groups); for the 1920–81 period, the series were estimated from the published tax statistics tables, according to the following methodology (all computations are available from the authors upon request).

The published tables report the number of returns and tax paid by income brackets. Starting in 1938, the reported income amounts by income brackets are also available. In general, these tables display a large number of income brackets (the thresholds P90, P95, P99, P99.5, P99.9, and P99.99 are usually very close to one of the income bracket thresholds), and one can use standard Pareto interpolation techniques in order to estimate the income thresholds and income levels of the tax unit distribution of income.

### **Pareto Interpolation Technique**

The general interpolation technique is that described in Appendix 5C. It is based on the well known empirical regularity that the top tail of the income distribution

Table 6B.1 Top income shares in Canada, 1920–2000 (Groups are defined by total income (excluding capital gains))

	P90–100 (1)	P95–100 (2)	P99–100 (3)	P99.5–100 (4)	P99.9–100 (5)	P99.99–100 (6)	P90–95 (7)	P95–99 (8)	P99–99.5 (9)	P99.5–99.9 (10)	P99.9–99.99 (11)
1920		32.60	14.40	10.49	5.36	2.10		18.19	3.91	5.13	3.26
1921		40.58	17.60	12.55	5.81	1.70		22.98	5.05	6.74	4.10
1922		34.34	15.17	10.74	5.04	1.63		19.17	4.43	5.70	3.41
1923		30.15	14.38	10.22	4.69	1.53		15.77	4.17	5.52	3.16
1924		30.65	14.53	10.39	4.89	1.63		16.11	4.14	5.50	3.26
1925		29.76	13.18	9.48	4.34	1.32		16.59	3.70	5.14	3.02
1926		30.15	14.01	10.22	4.81	1.57		16.14	3.79	5.41	3.23
1927		30.70	14.69	10.78	5.13	1.74		16.01	3.91	5.65	3.40
1928		31.31	15.32	11.23	5.29	1.75		16.00	4.09	5.94	3.54
1929		31.73	15.64	11.47	5.34	1.71		16.09	4.17	6.14	3.63
1930		32.74	16.10	11.86	5.68	1.84		16.63	4.24	6.18	3.84
1931		36.03	16.60	12.00	5.55	1.72		19.42	4.61	6.44	3.84
1932		39.42	17.67	12.72	5.98	1.90		21.75	4.96	6.74	4.08
1933		40.88	18.03	12.89	5.91	1.73		22.84	5.14	6.99	4.18
1934		39.11	17.50	12.59	5.86	1.84		21.61	4.91	6.73	4.03
1935		38.09	16.99	12.19	5.63	1.72		21.10	4.79	6.56	3.91
1936		38.35	17.45	12.67	6.00	1.91		20.90	4.78	6.67	4.09
1937		35.81	16.26	11.79	5.48	1.54		19.55	4.46	6.32	3.94
1938		39.55	18.41	13.31	6.05	1.87		21.15	5.10	7.26	4.18
1939		37.23	16.88	12.23	5.63	1.67		20.34	4.66	6.60	3.96
1940		33.68	14.71	10.35	4.52	1.53		18.97	4.36	5.84	2.99
1941	45.31	30.74	13.30	9.46	4.24	1.29	14.56	17.45	3.84	5.22	2.95
1942	39.56	26.42	11.30	8.01	3.53	1.06	13.14	15.13	3.29	4.48	2.47
1943	39.29	25.84	10.72	7.51	3.23	0.92	13.45	15.12	3.21	4.29	2.31
1944	37.38	24.49	10.01	6.95	2.92	0.82	12.89	14.48	3.06	4.02	2.11
1945	37.27	24.63	10.12	6.99	2.89	0.78	12.64	14.51	3.13	4.10	2.11
1946	37.75	25.30	10.72	7.42	3.02	0.79	12.45	14.57	3.31	4.40	2.22
1947	38.14	25.66	10.99	7.61	3.09	0.82	12.47	14.67	3.38	4.53	2.27

1948	36.68	24.49	10.39	7.20	2.94	0.71	12.19	14.10	3.19	4.26	2.23
1949	38.22	25.37	10.69	7.38	2.91	0.69	12.84	14.69	3.31	4.46	2.23
1950	38.24	25.45	10.88	7.58	3.06	0.74	12.79	14.57	3.30	4.51	2.33
1951	36.31	23.96	10.03	6.94	2.80	0.65	12.35	13.93	3.09	4.14	2.15
1952	36.44	23.91	9.85	6.75	2.71	0.67	12.52	14.07	3.09	4.04	2.03
1953	37.36	24.37	9.88	6.75	2.70	0.66	12.98	14.50	3.12	4.05	2.04
1954	38.68	25.29	10.33	7.10	2.82	0.71	13.39	14.96	3.23	4.28	2.11
1955	38.08	24.90	10.19	7.00	2.86	0.75	13.18	14.71	3.19	4.14	2.11
1956	37.22	24.19	9.63	6.57	2.63	0.65	13.04	14.56	3.06	3.94	1.98
1957	37.76	24.50	9.64	6.54	2.59	0.64	13.26	14.86	3.10	3.95	1.95
1958	38.39	25.00	9.89	6.68	2.62	0.64	13.39	15.11	3.21	4.06	1.98
1959	38.44	24.94	9.74	6.55	2.54	0.61	13.50	15.21	3.19	4.01	1.93
1960	38.78	25.13	9.77	6.56	2.52	0.61	13.65	15.36	3.21	4.03	1.92
1961	39.35	25.53	9.93	6.63	2.55	0.63	13.82	15.61	3.29	4.08	1.92
1962	37.77	24.42	9.37	6.23	2.33	0.54	13.36	15.05	3.14	3.90	1.79
1963	37.37	24.11	9.14	6.06	2.24	0.51	13.26	14.96	3.08	3.82	1.73
1964	37.77	24.43	9.38	6.24	2.33	0.54	13.34	15.05	3.14	3.92	1.78
1965	37.23	24.04	9.20	6.12	2.28	0.54	13.19	14.84	3.08	3.84	1.74
1966	36.76	23.70	8.91	5.88	2.16	0.49	13.06	14.80	3.03	3.73	1.66
1967	37.06	23.91	9.00	5.93	2.15	0.47	13.15	14.91	3.07	3.78	1.68
1968	37.31	24.02	9.04	5.96	2.17	0.47	13.28	14.99	3.07	3.80	1.70
1969	37.34	24.01	9.01	5.91	2.13	0.46	13.33	15.00	3.09	3.78	1.67
1970	37.92	24.22	8.97	5.87	2.07	0.43	13.69	15.25	3.10	3.79	1.64
1971	37.83	24.08	8.87	5.79	2.00	0.40	13.76	15.21	3.08	3.79	1.60
1972	37.55	23.84	8.75	5.74	2.02	0.43	13.71	15.09	3.00	3.72	1.59
1973	37.02	23.65	8.80	5.78	2.06	0.46	13.37	14.85	3.02	3.72	1.60
1974	37.38	23.82	8.81	5.76	2.09	0.48	13.57	15.01	3.05	3.68	1.61
1975	37.28	23.71	8.74	5.73	2.11	0.51	13.56	14.97	3.01	3.62	1.60
1976	36.74	22.99	8.08	5.21	1.88	0.44	13.75	14.91	2.87	3.33	1.43
1977	36.18	22.43	7.74	4.98	1.79	0.43	13.75	14.69	2.76	3.20	1.36
1978	35.77	22.17	7.60	4.90	1.77	0.44	13.60	14.57	2.70	3.13	1.33
1979	35.57	22.11	7.72	5.06	1.86	0.48	13.46	14.40	2.65	3.20	1.38
1980	36.23	22.68	8.06	5.27	1.97	0.53	13.56	14.62	2.79	3.29	1.44
1981	35.39	22.10	7.80	5.08	1.88	0.50	13.29	14.30	2.72	3.20	1.39

(cont'd.)

Table 6B.1 (Cont'd.)

	P90-100 (1)	P95-100 (2)	P99-100 (3)	P99.5-100 (4)	P99.9-100 (5)	P99.99-100 (6)	P90-95 (7)	P95-99 (8)	P99-99.5 (9)	P99.5-99.9 (10)	P99.9-99.99 (11)
1982	36.24	22.92	8.46	5.66	2.33	0.68	13.32	14.47	2.80	3.33	1.65
1983	36.19	22.71	8.21	5.44	2.13	0.57	13.48	14.49	2.78	3.30	1.56
1984	35.78	22.48	8.29	5.55	2.28	0.68	13.30	14.20	2.73	3.28	1.60
1985	35.25	22.20	8.21	5.51	2.26	0.67	13.04	13.99	2.70	3.26	1.59
1986	35.22	22.22	8.24	5.52	2.24	0.64	13.00	13.97	2.72	3.28	1.60
1987	35.05	22.22	8.40	5.69	2.38	0.70	12.83	13.82	2.71	3.31	1.68
1988	35.66	23.11	9.34	6.54	3.00	1.01	12.55	13.77	2.79	3.54	1.99
1989	36.36	23.83	10.01	7.15	3.44	1.29	12.53	13.82	2.86	3.71	2.15
1990	35.54	23.08	9.35	6.55	2.98	1.01	12.46	13.73	2.80	3.57	1.96
1991	36.31	23.47	9.37	6.51	2.91	0.99	12.84	14.11	2.86	3.60	1.92
1992	36.72	23.60	9.31	6.44	2.82	0.94	13.12	14.29	2.87	3.62	1.89
1993	37.31	24.03	9.56	6.64	2.97	0.99	13.28	14.48	2.91	3.67	1.98
1994	37.49	24.16	9.59	6.65	2.94	0.95	13.33	14.57	2.94	3.71	1.99
1995	37.85	24.65	10.00	6.99	3.13	1.03	13.21	14.64	3.02	3.86	2.10
1996	38.77	25.48	10.62	7.53	3.47	1.14	13.29	14.85	3.10	4.06	2.33
1997	39.78	26.51	11.52	8.32	3.97	1.33	13.26	14.99	3.20	4.35	2.64
1998	40.61	27.35	12.18	8.87	4.34	1.48	13.26	15.17	3.31	4.53	2.85
1999	41.17	27.89	12.62	9.25	4.61	1.68	13.29	15.27	3.37	4.64	2.93
2000	42.34	29.01	13.56	10.11	5.23	1.89	13.34	15.44	3.45	4.88	3.34

Notes: Computations by authors based on tax return statistics. See Appendix Section B for details. Series for P90-95 are estimated only for the 1941-2000 period because the tax return population does not cover that group in the pre-war period.

Table 6B.2 Top income shares including capital gains in Canada, 1972–2000

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	P90–100	P95–100	P99–100	P99.5–100	P99.9–100	P99.99–100	P90–95	P95–99	P99–99.5	P99.5–99.9	P99.9–99.99
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<b>Panel A: Groups ranked by income including full capital gains</b>											
1972	37.81	24.11	8.92	5.85	2.08	0.46	13.70	15.19	3.07	3.76	1.62
1973	37.27	23.92	8.98	5.90	2.14	0.50	13.35	14.94	3.09	3.75	1.64
1974	37.61	24.07	8.97	5.86	2.15	0.51	13.54	15.10	3.11	3.71	1.64
1975	37.48	23.96	8.91	5.84	2.19	0.55	13.52	15.05	3.08	3.65	1.64
1976	36.90	23.23	8.29	5.36	1.98	0.49	13.67	14.94	2.93	3.39	1.49
1977	36.36	22.71	8.01	5.18	1.93	0.49	13.65	14.70	2.83	3.26	1.44
1978	36.49	22.95	8.10	5.17	1.96	0.51	13.53	14.85	2.94	3.21	1.45
1979	36.42	23.11	8.46	5.52	2.20	0.63	13.31	14.66	2.93	3.33	1.57
1980	37.23	23.84	8.88	5.84	2.39	0.68	13.39	14.96	3.04	3.45	1.71
1981	36.47	23.25	8.55	5.56	2.23	0.64	13.23	14.70	2.99	3.32	1.60
1982	36.58	23.35	8.89	6.05	2.59	0.78	13.22	14.46	2.85	3.46	1.81
1983	36.66	23.29	8.76	5.91	2.43	0.70	13.37	14.53	2.86	3.47	1.74
1984	36.11	22.92	8.73	5.94	2.54	0.78	13.19	14.20	2.79	3.40	1.75
1985	35.87	22.94	8.88	6.09	2.63	0.83	12.93	14.06	2.80	3.46	1.80
1986	36.22	23.35	9.15	6.26	2.67	0.82	12.87	14.20	2.90	3.58	1.85
1987	36.57	24.01	9.88	6.87	3.03	0.97	12.56	14.13	3.02	3.83	2.06
1988	37.07	24.72	10.74	7.70	3.66	1.20	12.35	13.97	3.04	4.05	2.46
1989	38.20	25.93	11.90	8.76	4.40	1.60	12.27	14.03	3.14	4.36	2.81
1990	36.33	24.03	10.18	7.21	3.30	1.07	12.30	13.85	2.97	3.91	2.23
1991	37.16	24.49	10.29	7.28	3.32	1.10	12.67	14.21	3.01	3.96	2.22
1992	37.80	24.87	10.47	7.40	3.32	1.03	12.94	14.40	3.07	4.08	2.29
1993	38.95	25.95	11.26	8.04	3.65	1.16	13.00	14.69	3.23	4.39	2.48
1994	38.56	25.64	11.21	8.07	3.61	1.09	12.93	14.43	3.14	4.46	2.52
1995	38.64	25.60	10.93	7.77	3.54	1.14	13.04	14.67	3.15	4.24	2.40
1996	39.63	26.53	11.64	8.40	3.97	1.31	13.10	14.89	3.24	4.43	2.65
1997	40.83	27.79	12.75	9.37	4.59	1.56	13.04	15.04	3.38	4.78	3.03
1998	41.63	28.61	13.40	9.91	4.92	1.70	13.02	15.21	3.49	4.99	3.23
1999	42.28	29.22	13.88	10.33	5.18	1.87	13.06	15.34	3.56	5.15	3.31
2000	44.04	31.07	15.50	11.76	6.16	2.20	12.98	15.56	3.75	5.60	3.95
<b>Panel B: Groups ranked by income excluding capital gains</b>											
1972	37.60	23.94	8.86	5.83	2.07	0.45	13.66	15.08	3.03	3.76	1.61
1973	37.09	23.76	8.92	5.87	2.12	0.48	13.33	14.83	3.05	3.75	1.63

(contd.)

**Table 6B.2 Top income shares including capital gains in Canada, 1972–2000**

	P90–100 (1)	P95–100 (2)	P99–100 (3)	P99.5–100 (4)	P99.9–100 (5)	P99.99–100 (6)	P90–95 (7)	P95–99 (8)	P99–99.5 (9)	P99.5–99.9 (10)	P99.9–99.99 (11)
1974	37.45	23.91	8.91	5.84	2.13	0.50	13.54	15.00	3.07	3.71	1.63
1975	37.34	23.81	8.86	5.81	2.16	0.53	13.53	14.95	3.04	3.65	1.63
1976	36.83	23.13	8.25	5.33	1.95	0.47	13.70	14.88	2.91	3.39	1.48
1977	36.30	22.62	7.97	5.14	1.89	0.46	13.68	14.65	2.82	3.25	1.42
1978	35.95	22.44	7.91	5.13	1.92	0.48	13.50	14.51	2.78	3.21	1.43
1979	35.89	22.57	8.25	5.45	2.11	0.57	13.31	14.28	2.80	3.33	1.54
1980	36.64	23.26	8.68	5.75	2.27	0.62	13.37	14.54	2.93	3.46	1.65
1981	35.68	22.52	8.28	5.49	2.14	0.58	13.14	14.21	2.79	3.33	1.56
1982	36.31	23.09	8.67	5.85	2.46	0.72	13.22	14.42	2.82	3.40	1.73
1983	36.32	22.96	8.49	5.68	2.27	0.60	13.36	14.47	2.81	3.41	1.67
1984	35.83	22.65	8.51	5.76	2.39	0.70	13.18	14.14	2.75	3.36	1.69
1985	35.45	22.53	8.55	5.80	2.43	0.75	12.92	13.98	2.75	3.36	1.68
1986	35.58	22.74	8.73	5.92	2.47	0.71	12.84	14.01	2.81	3.45	1.77
1987	35.51	22.91	9.07	6.22	2.66	0.79	12.60	13.84	2.85	3.57	1.87
1988	36.10	23.73	9.93	7.02	3.25	1.05	12.37	13.81	2.91	3.77	2.20
1989	37.13	24.81	10.94	7.92	3.86	1.34	12.33	13.87	3.01	4.07	2.51
1990	35.71	23.38	9.64	6.77	3.08	1.03	12.33	13.74	2.87	3.69	2.05
1991	36.54	23.84	9.73	6.80	3.05	1.04	12.70	14.10	2.93	3.75	2.01
1992	37.06	24.08	9.75	6.79	2.97	0.96	12.98	14.33	2.96	3.81	2.01
1993	37.78	24.71	10.16	7.10	3.18	1.05	13.07	14.55	3.06	3.92	2.13
1994	37.40	24.40	10.11	7.12	3.15	0.99	13.00	14.29	2.98	3.98	2.16
1995	38.09	25.01	10.36	7.27	3.27	1.05	13.08	14.66	3.08	4.00	2.22
1996	38.99	25.88	11.05	7.88	3.67	1.20	13.11	14.83	3.17	4.22	2.47
1997	40.09	27.03	12.07	8.75	4.15	1.36	13.05	14.96	3.32	4.60	2.79
1998	40.92	27.87	12.71	9.30	4.59	1.51	13.05	15.16	3.41	4.72	3.08
1999	41.50	28.42	13.14	9.63	4.77	1.71	13.08	15.28	3.50	4.87	3.06
2000	42.87	29.82	14.35	10.77	5.55	1.92	13.05	15.47	3.58	5.22	3.63

Notes: In Panel A, tax returns are ranked by total income including full capital gains, and shares are computed as total income and capital gains accruing to upper groups divided by total income plus total capital gains in the economy (from Table A). In Panel B, individuals are ranked by income excluding capital gains (as in Table B1) but capital gains are added back (in both the numerator and the denominator) to compute top shares. All details in Appendix Section B.

**Table 6B.3** Top fractile income levels (excluding capital gains) in Canada, 1920–2000

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	P90–100	P95–100	P99–100	P99.5–100	P99.9–100	P99.99–100	P90–95	P95–99	P99–99.9	P99.5–99.9	P99.9–99.99	P90	P95	P99	P99.5	P99.9	P99.99
1920	32,469	71,733	104,519	267,051	1,045,891	22,653	38,947	63,886	180,513	17,311	34,101	45,662	110,173	418,867			
1921	36,311	78,753	112,300	259,766	761,937	25,700	45,206	75,433	203,969	19,390	39,351	53,371	128,898	418,693			
1922	34,248	75,650	107,134	251,252	813,402	23,897	44,166	71,104	188,794	19,273	38,588	51,905	119,336	402,114			
1923	31,957	76,231	108,273	248,609	812,975	20,889	44,189	73,189	185,902	18,232	38,120	52,700	121,58	394,127			
1924	32,130	76,184	108,925	256,324	854,937	21,117	43,444	72,075	189,811	17,948	37,488	51,787	121,332	408,624			
1925	33,331	73,783	106,138	243,143	738,052	23,218	41,427	71,887	188,153	17,899	34,715	51,062	119,211	389,900			
1926	35,841	83,283	121,498	285,793	935,604	23,980	45,068	80,424	213,592	18,034	37,245	56,539	137,099	449,063			
1927	37,939	90,778	133,260	317,177	1,072,686	24,729	48,296	87,281	233,298	18,329	39,758	60,525	149,795	503,521			
1928	40,541	99,151	145,395	342,674	1,131,672	25,888	52,906	96,076	254,935	18,655	43,605	66,064	163,731	546,411			
1929	39,930	98,428	144,389	335,707	1,072,879	25,305	52,467	96,559	253,729	18,242	43,149	65,631	166,663	529,034			
1930	38,173	93,884	138,348	331,235	1,074,576	24,245	49,420	90,112	248,642	17,638	40,712	61,880	156,424	533,934			
1931	37,825	87,161	125,951	291,516	902,424	25,491	48,360	84,560	223,696	18,856	40,688	59,347	142,159	471,635			
1932	36,851	82,585	118,853	279,302	888,476	25,417	46,317	78,741	211,616	18,913	39,421	56,013	131,514	464,851			
1933	35,944	79,284	113,361	259,662	759,290	25,109	45,206	76,786	204,148	18,761	38,670	54,947	126,986	440,499			
1934	37,194	83,231	119,759	278,784	873,014	25,684	46,703	80,002	212,759	18,992	39,712	56,777	133,364	458,506			
1935	37,805	84,311	121,034	279,382	851,694	26,179	47,588	81,447	215,846	19,426	40,300	57,873	135,930	450,137			
1936	39,362	89,549	130,044	307,839	978,228	26,815	49,055	85,608	233,294	19,889	41,416	59,977	145,337	501,019			
1937	39,705	90,125	130,756	303,688	853,743	27,099	49,495	87,522	242,633	20,167	41,818	60,664	149,065	543,315			
1938	43,465	101,124	146,227	332,244	1,025,799	29,050	56,021	99,723	255,183	20,984	46,459	69,134	165,112	517,246			
1939	42,495	96,366	139,581	321,411	955,500	29,027	53,152	94,109	251,020	21,145	44,905	64,643	159,339	516,173			
1940	42,286	92,330	129,976	283,533	959,970	29,775	54,685	91,586	208,374	22,198	46,296	66,045	145,424	383,178			
1941	42,983	92,953	132,247	296,050	898,984	20,359	30,491	53,645	229,057	17,429	23,935	45,837	65,019	150,140	477,795		
1942	33,165	44,301	94,704	134,263	296,174	22,029	31,701	55,127	93,786	19,425	25,219	47,238	67,139	152,135	476,240		
1943	34,709	45,659	94,690	132,714	284,918	23,760	33,399	56,666	94,664	21,258	26,944	48,891	68,590	151,055	459,722		
1944	35,407	46,393	94,814	131,598	276,893	24,421	34,287	58,031	95,274	21,871	27,588	50,247	70,026	150,037	443,584		
1945	34,678	45,831	94,164	130,030	268,973	23,526	33,747	58,298	95,294	21,064	26,749	50,396	70,283	148,844	430,675		
1946	34,111	45,724	96,914	134,074	272,649	22,497	32,927	59,753	99,431	22,321	26,902	50,902	72,436	156,354	424,514		
1947	35,435	47,689	102,140	141,433	286,732	23,180	34,076	62,847	105,109	20,799	26,410	52,727	76,313	163,025	454,757		
1948	34,163	45,619	96,774	134,105	273,836	22,708	32,830	59,443	99,173	20,195	25,740	50,207	71,812	155,955	439,619		
1949	35,013	46,496	97,897	135,177	266,891	23,530	33,645	60,616	102,249	20,994	26,685	51,530	74,059	160,900	422,834		

(contd.)

Table 6B.3 (Contd.)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
	P90-100	P95-100	P99-100	P99.5-100	P99.9-100	P99.99-100	P90-95	P95-99	P99-99.5	P99.5-99.9	P99.9-99.99	P90	P95	P99	P99.5	P99.9	P99.99
1950	35,672	47,480	101,471	141,320	285,532	686,545	23,865	33,982	61,621	105,267	240,975	21,412	26,881	52,003	75,686	165,197	442,924
1951	36,009	47,524	99,490	137,692	278,081	644,625	24,494	34,532	61,289	102,595	237,354	22,209	27,587	51,962	74,234	166,579	421,316
1952	37,475	49,188	101,258	138,892	278,525	693,226	25,762	36,171	63,625	103,984	232,447	23,311	29,147	53,868	76,488	162,599	445,520
1953	39,901	52,067	105,489	144,284	288,824	708,175	27,735	38,712	66,694	108,149	242,230	25,024	31,297	57,082	79,659	169,329	446,235
1954	40,144	52,494	107,220	147,353	292,361	731,681	27,793	38,813	67,086	111,101	243,548	25,051	31,388	57,418	81,016	173,524	444,318
1955	41,886	54,777	112,063	153,978	314,335	827,081	28,996	40,455	70,148	113,889	257,363	26,165	32,665	59,918	84,225	176,429	487,650
1956	43,947	57,108	113,633	155,131	310,617	767,392	30,785	42,977	72,135	116,260	259,864	27,857	34,827	62,372	86,506	181,296	478,780
1957	44,910	58,284	114,649	155,458	307,943	756,477	31,537	44,193	73,840	117,337	258,106	28,374	35,745	64,094	87,896	181,157	469,872
1958	45,760	59,594	117,880	159,183	312,073	761,706	31,925	45,023	76,576	120,961	262,114	28,791	36,162	66,328	90,863	185,037	468,832
1959	46,758	60,675	118,404	159,332	309,177	746,792	32,842	46,243	77,477	121,871	260,553	29,678	37,226	67,438	91,478	185,716	465,186
1960	48,106	62,350	121,183	162,718	313,129	751,808	33,861	47,642	79,647	125,115	264,387	30,577	38,362	69,429	93,975	189,202	475,098
1961	49,309	63,991	124,384	166,238	319,418	785,701	34,626	48,893	82,530	127,943	267,609	31,197	39,209	71,899	96,886	192,280	482,447
1962	50,378	65,133	124,982	166,181	310,622	721,540	35,624	50,171	83,784	130,071	264,965	32,344	40,608	73,805	98,631	192,956	466,689
1963	51,625	66,605	126,302	167,417	309,469	699,068	36,644	51,681	85,187	131,904	266,180	32,998	41,546	75,166	99,965	194,910	460,322
1964	54,127	70,017	134,446	178,898	333,464	778,130	38,236	53,910	89,994	140,257	284,056	34,490	43,280	78,997	106,503	206,845	496,485
1965	56,705	73,242	140,151	186,533	347,294	816,445	40,167	56,515	93,769	146,343	295,166	36,207	45,378	81,806	109,948	213,399	507,094
1966	59,206	76,356	143,473	189,504	347,569	795,641	42,056	59,576	97,442	149,988	297,784	37,641	47,277	84,934	113,140	216,801	500,622
1967	61,195	78,959	148,563	195,739	355,183	779,389	43,431	61,559	101,387	155,878	308,049	39,091	49,332	89,051	119,179	227,947	517,421
1968	63,078	81,243	152,770	201,687	366,411	796,399	44,913	63,361	103,853	160,506	318,635	40,495	50,877	91,467	122,355	237,100	532,448
1969	65,384	84,076	157,730	207,108	373,664	805,461	46,692	65,663	108,352	165,470	325,686	42,072	52,787	94,383	126,371	246,253	535,568
1970	67,341	86,040	159,290	208,397	368,166	769,011	48,641	67,728	110,183	168,454	323,628	43,805	54,990	96,220	128,023	247,758	526,095
1971	69,919	88,985	163,851	214,008	369,433	744,779	50,852	70,269	113,694	175,152	327,727	45,888	57,394	99,184	132,204	253,542	523,234
1972	73,170	92,920	170,477	223,834	393,453	839,912	53,419	73,536	117,081	181,429	343,630	48,295	60,084	103,422	137,654	261,632	569,864
1973	76,683	97,975	182,211	239,302	426,940	946,684	55,392	76,915	125,078	192,392	369,191	50,024	62,420	109,872	147,169	277,333	613,789
1974	80,789	102,949	190,433	249,128	450,798	1,039,472	58,634	81,078	131,739	198,710	385,390	52,619	66,074	115,762	153,918	286,468	666,746
1975	81,990	104,318	192,266	252,029	464,774	1,119,592	59,662	82,331	132,503	198,898	392,016	53,892	67,160	116,966	154,912	286,913	695,411
1976	83,690	104,755	184,023	237,238	427,139	1,004,692	62,624	84,938	130,807	189,763	362,720	56,656	70,346	116,245	149,956	271,640	625,313
1977	82,325	102,085	176,188	226,710	406,221	967,130	62,565	83,560	125,667	181,832	343,891	56,736	69,939	112,408	144,101	257,338	600,746
1978	81,512	101,050	173,218	223,255	403,081	993,461	61,973	83,014	123,180	178,299	337,230	56,076	69,446	111,222	141,376	252,057	595,647
1979	82,252	102,257	178,397	234,194	430,559	1,116,863	62,248	83,216	122,647	185,045	354,303	56,128	69,550	110,773	143,486	268,957	633,595



1980	84,070	105,239	187,007	244,362	457,310	1,222,741	62,905	84,797	129,652	191,068	372,262	56,824	70,522	116,412	149,806	281,558	679,990
1981	84,328	105,329	185,866	242,245	447,984	1,181,916	63,328	85,200	129,486	190,810	366,701	57,186	70,877	116,010	149,484	276,425	666,223
1982	82,892	104,861	193,412	258,905	533,228	1,548,671	60,922	82,724	127,920	190,324	420,401	54,956	68,441	114,034	147,839	284,221	868,025
1983	79,779	100,120	181,078	239,629	470,000	1,254,361	59,438	79,880	122,526	182,037	382,848	53,606	66,602	109,279	141,709	267,553	741,082
1984	80,438	101,088	186,246	249,662	511,868	1,524,140	59,788	79,798	122,830	184,111	399,394	54,083	66,713	109,058	142,482	275,368	798,859
1985	81,091	102,161	188,980	253,584	518,810	1,532,272	60,021	80,456	124,376	187,278	406,203	54,335	67,156	110,273	144,762	280,133	836,173
1986	81,849	103,281	191,613	256,645	521,100	1,494,503	60,417	81,198	126,580	190,532	412,945	54,558	67,588	112,082	147,540	283,722	812,886
1987	82,441	104,520	197,483	267,450	558,558	1,646,277	60,362	81,279	127,516	194,672	437,701	54,541	67,544	112,595	149,078	295,924	888,355
1988	87,393	113,265	228,770	320,597	734,711	2,472,727	61,522	84,389	136,943	217,068	541,598	55,472	69,276	119,505	161,990	344,180	1,229,108
1989	90,447	118,548	248,996	355,908	856,437	3,208,841	62,346	85,936	142,084	230,775	595,059	56,194	70,133	123,433	169,449	371,951	1,390,897
1990	88,404	114,829	232,553	325,744	740,598	2,522,562	61,979	85,398	139,363	222,030	542,602	55,777	69,757	121,607	165,217	349,771	1,215,448
1991	85,622	110,681	220,811	306,754	686,128	2,331,894	60,563	83,149	134,868	211,910	503,266	54,383	68,269	117,966	159,102	329,009	1,109,688
1992	85,169	109,484	216,013	298,795	654,325	2,168,714	60,854	82,852	133,231	209,913	486,060	54,717	68,435	116,400	157,569	323,488	1,060,636
1993	85,092	109,602	217,895	302,932	677,059	2,259,905	60,582	82,529	132,858	209,400	501,188	54,346	68,179	116,215	156,774	326,131	1,105,608
1994	86,176	111,076	220,515	305,806	675,660	2,179,401	61,276	83,716	135,224	213,342	508,578	55,081	68,942	118,176	159,967	332,208	1,126,661
1995	88,010	114,607	232,562	324,871	727,543	2,387,939	61,412	85,118	140,254	224,204	543,054	55,202	69,470	122,149	166,491	355,236	1,210,910
1996	89,831	118,072	246,173	348,776	803,817	2,646,178	61,590	86,047	143,570	235,016	599,110	55,166	69,815	124,424	171,713	381,630	1,348,195
1997	93,299	124,377	270,296	390,338	931,868	3,128,899	62,221	87,898	150,253	254,956	687,753	55,641	70,646	129,178	182,008	428,509	1,634,284
1998	97,273	131,011	291,703	424,918	1,038,460	3,554,959	63,534	90,838	158,488	271,533	758,849	56,551	72,345	135,170	192,393	458,368	1,799,985
1999	100,093	135,586	306,740	449,765	1,119,794	4,074,630	64,601	92,798	163,715	282,258	791,479	57,483	73,638	139,473	198,915	478,918	1,931,959
2000	105,262	144,214	337,142	502,556	1,300,639	4,695,923	66,310	95,982	171,728	303,035	923,385	59,232	75,670	145,774	210,150	530,310	2,396,050

Notes: Groups are ranked by total income excluding capital gains. All amounts are reported in Canadian 2000 dollars (US\$1 = CA\$1.5 in 2000). Computations by authors based on income tax return statistics. All details in Appendix Section B.

is very closely approximated by a Pareto distribution. As described in earlier chapters, a Pareto distribution has the key property that the average income above a given threshold  $y$  is always exactly proportional to  $y$ . The coefficient of proportionality is equal to  $b = a/(a - 1)$ .

For years before 1938, when the amounts by income brackets are not reported, we first estimate the amounts reported by bracket using the method described in Appendix 5C. When data on amounts reported are available (starting in 1938), we verify that our estimated amounts  $Y$  are very close to the true reported amounts (in general the true and estimated amounts differ by less than 2–3%).

### Adjustments to Raw Pareto Interpolation

Published tax statistics tables rank tax returns by net income (1920–45) or by gross income (1946–2000). Gross tax income is defined as the sum of all sources of income before any deductions. Net income is gross tax income less deductions such as medical costs or charitable contributions allowed but before deducting personal and marital status exemptions. From 1920 to 1928, no deductions were allowed and net income is equal to gross tax income. From 1929 on, charitable deductions were allowed up to 10% of income, and medical expenses (in excess of 5% of income and up to a relatively modest maximum amount) were deductible from income. Starting in 1946, the level of deduction can be computed for each group using the composition tables. In the 1940s and 1950s, this amount fluctuates around 2% for all the income groups within the top decile.<sup>34</sup> Therefore, we increase our raw income thresholds, levels, and top shares (based on net income) by 2% for all groups in the period 1929–45.

Starting in 1946, in order to report statistics more quickly, the fiscal administration decided to compile tax statistics about one year after the filing deadline. Because of late filing, a small number of returns were not included in the statistics. To correct for this and based on the *Taxation Statistics* reports, we increase the number of returns and amounts reported by bracket by 2% from 1946 to 1957 and by 1% from 1958 to 1963. After 1963, the number of missing returns due to late filing is deemed to be extremely small and no correction is made.

For many of the pre-war years, the exemption levels were so high (especially in the period 1925–31) that less than 5% of adult individuals actually filed returns (see Table 6A.1, column (3)). However, the exemption level for singles is always half of the exemption level for married individuals. Thus from 1920 on, it is always the case that more than 5% of single individuals are actually filing returns, although for some years less than 5% of married tax units are filing returns. As a result, the number of taxpayers in the bottom brackets is too low for some years and needs to be adjusted upward. We adjusted for missing married returns using a simple extrapolation method, based on the assumption that marital ratios

<sup>34</sup> The level of deductions was much lower in Canada than in the United States at the top because the United States allowed unlimited charitable deductions as well as deductions for interest paid on debt.

(i.e. ratios of married individuals to single individuals) across income brackets is constant over those years.<sup>35</sup>

Starting in 1972, a fraction of capital gains is included in gross income and the dividend tax credit is introduced. From 1972 to 1987, 50% of realized gains were included in taxable income. In 1988 and 1989, 66.6% of gains were included in taxable income. From 1990 to 1999, 75% of gains were included in taxable income. Finally, over the course of tax year 2000, the amount of gains taxable was reduced back to 50%.<sup>36</sup> The dividend tax credit works as follows. First, dividends reported on tax returns are multiplied by a gross-up factor. This factor was  $4/3$  for 1972–77,  $3/2$  from 1978 to 1986,  $4/3$  in 1987, and  $5/4$  from 1988 to 2000. Second, a tax credit proportional to the grossed-up amount of dividends reported can be deducted from personal income tax liability. This dividend tax credit approximately offsets the corporate income tax paid on profits before distribution to shareholders in the form of dividends.<sup>37</sup> The important point for our study is that, after 1972, the income tax statistics rank individual taxpayers by gross income, which includes the taxable fraction of realized capital gains, as well as the grossed-up dividend amounts. The series we want to estimate are based on gross income excluding capital gains and including only the actual amount of dividends distributed.

The raw series we compute are based on the income definition reported in the income tax statistics, which includes capital gains and grossed-up dividends. Therefore, these raw series are an over-estimate of the income shares based on income excluding capital gains and dividend gross-up. In order to compute our series from the raw series, one could simply deduct for each group the share of capital gains and the grossed-up extra amount of dividends estimated from composition tables. The problem is that ranking according to the income tax statistics and ranking according to our income definition might be different, especially at the very top. For example, in the extreme case where very top incomes of the income tax statistics distributions consist only of capital gains, then the deduction of capital gains would lead to the conclusion that the very top incomes of the income (excluding capital gains) distribution are equal to zero. Therefore, deducting the full amount of capital gains and dividend gross-up would provide an

<sup>35</sup> More precisely, we assume that the ratio of marital ratios over two adjacent brackets is constant from year to year. We verify this assumption comparing these ratios for years with low filing thresholds and where missing returns is not an issue. We use the closest years for which the filing threshold is low enough so that all the married tax units with income in that particular income bracket file a return to compute these marital ratios. We then extrapolate the marital ratio for a year with high filing threshold in a low bracket using the bracket just above for that year and the marital ratios for the year with complete returns. We then compute the expected number of married tax units in each bracket in high filing threshold years. We thus obtain the missing number of returns in each bracket or equivalently a multiplier factor by which we must adjust the actual number of returns to obtain the real number of tax units.

<sup>36</sup> More precisely, 75% of capital gains realized before 28 February 2000, 66.6% of gains realized on or after 28 February and before 18 October and 50% of the gains realized on or after 18 October 2000 are included in taxable income. Under the present tax law, for years 2001 and after, 50% of realized gains are included in taxable income.

<sup>37</sup> The offset would be exact if the grossed-up factor and the dividend tax credit rate were equal to the corporate income tax rate. Before 1972, there was no dividend gross-up and the dividend tax credit was 10% of dividends from 1949 (the first year such a credit was introduced) to 1952, and 20% from 1953 to 1971. Since 1972, the dividend credit has fluctuated between 16.66% and 25%.

underestimate of the income shares we would like to estimate. However, the LAD micro-files available from 1982 allowed us to compute the magnitude of the corrections that one needs to apply in order to obtain unbiased series from the *Taxation Statistics* tables for the period 1972–81. More precisely, we computed the correction coefficients to be applied to the thresholds and average income levels for each fractile using the year 1982 for which we have both the imperfect published data and the micro-data, which allows to do exact computations. It turns out that those correction coefficients are reasonably stable over the years 1982–2000 (the correction coefficients are always in a plus or minus 5% range) and therefore we are confident that the extrapolations we make for years 1972–81 are fairly precise. The top income shares are reported in Table 6B.1 and the income thresholds and income averages for each of our top groups are reported in Table 6B.3.

From 1972 on, we have also computed two alternative series based on income including full realized capital gains. In the first series, we rank individuals by income including full capital gains and include capital gains in income. After 1982, we use the LAD micro-data to rank individuals by income including capital gains and we compute top income shares in that case by dividing the income amounts for each top group by our total income denominator from Table 6A.1, column (4) plus the total amount of realized capital gains corresponding to the amounts reported on tax returns. For the period 1972–81, we have again to deal with the re-ranking issue as only 50% of capital gains are included in gross income and as dividends included are grossed-up. Let us call the sum of the 50% of realized gains excluded from gross income net of the extra dividend gross-up the net missing amount.<sup>38</sup> Again, simply adding to the amounts estimated from the raw published series the net missing amount would lead to series that are downward biased because of re-ranking. We adopt the same methodology as above to make the corrections for years 1972–81. Namely, we use the year 1982 to compute correction coefficients for each of our fractiles, and we apply those correction coefficients to all years 1972–81. We have also checked carefully that the correction coefficients are stable over the period 1982 to 2000. The top income share series including capital gains are reported in Table 6B.2, Panel A.

In the second series, we rank individuals by income excluding capital gains (as in Table 6B.1), but we add back capital gains in incomes (both in the numerator and the denominator). Exact computations are possible from 1982 on using the LAD micro-data. For the period 1972–81, we adjust our raw series using correction coefficients from the year 1982 (as above). The results are reported in Table 6B.1, Panel B.

### Notes on the Pre-War Published Statistics

Personal income taxation in Canada has always been assessed on a calendar year basis, meaning that income taxes were based on income earned during a calendar

<sup>38</sup> Note that the net missing amount could be negative if the dividend gross-up is larger than the capital gains exclusion.

year from 1 January to 31 December. From 1920 to 1940, however, the income tax statistics are reported by fiscal years (ending 31 March) and not by taxation year. Fiscal year means that the amounts and number of individuals were those for which income taxes were collected during the fiscal year 1 April of year  $t$  to 31 March of year  $t+1$ . However, because income tax returns and payments were due in mid-April of the following year, income taxes assessed and collected during fiscal year ending on 31 March of year  $t+1$  corresponded almost entirely to incomes earned during calendar year  $t-1$  (see Canadian Tax Foundation 1957: 190). Starting with tax year 1940, the exemptions were lowered significantly in order to increase revenues for the war. As a result the number of returns increased substantially and the fiscal administration was only able to assess 63.7% of all the returns filed for calendar tax year 1940 during fiscal year 1941/42. We assume that the returns assessed were drawn uniformly from all income classes and we simply multiply the number of individuals and amounts reported in the published table by a factor  $1/0.637$ .

The year 1942 saw the transformation of the income tax from the old system with little or no withholding and where taxpayers paid their tax liability when they filed tax returns in the year following the calendar tax year to a new system of pay-as-you-earn where the government implemented widespread withholding as income was earned. In order to relieve taxpayers from having to pay taxes for two years in 1942 (both for year 1941 under the old system and for year 1942 under the new pay-as-you-earn system), the tax liability for tax year 1942 was reduced by 50% relative to the nominal tax schedule.<sup>39</sup>

## APPENDIX 6C: COMPOSITION OF TOP INCOMES

### Occupation Data from 1920–45

From 1920 to 1945, the fiscal administration published in *The Canada Yearbook* tables dividing taxpayers into a number of occupational groups. A taxpayer was assigned to a group by major source of income. For example, those who reported wages and salaries as their major source of income were classified as employees. We report in Table 6C.1 the fraction of tax returns in each category as well as the fraction of the adult population filing tax returns for each year between 1920 and 1941. After 1941, the number of tax filers increased significantly and thus the figures cannot be compared with the pre-war years.

For tax year 1942, the fiscal administration first published occupation statistics by income brackets (Canada Customs and Revenue Agency 1947: 108–10). Using the income thresholds from our raw Pareto interpolations, we can estimate the fraction of taxpayers in each occupation for our top income groups. We have

<sup>39</sup> Higher incomes did not benefit fully from the 50% abatement as tax liabilities above a certain high threshold were to be paid at the time of death of the taxpayer. This deferral rule still made the tax burden for year 1942 much lower than the nominal rates.

Table 6C.1 Shares of total tax returns in each occupation in Canada, 1920–41

	Tax returns/adult population								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Employees	Agrarians	Professionals	Merchants	Manufacturers	Financial	Personal corporations	All others
1920	5.82%	71.33%	6.48%	5.90%	8.16%	0.56%			7.57%
1921	5.54%	74.10%	2.92%	6.77%	7.53%	0.62%			8.06%
1922	4.63%	73.67%	1.95%	8.60%	7.12%	0.54%			8.12%
1923	4.31%	74.89%	1.36%	8.60%	6.58%	0.50%			8.07%
1924	3.94%	75.52%	1.73%	8.38%	5.85%	0.43%			8.09%
1925	2.14%	70.20%	2.80%	5.50%	7.72%	0.74%	3.79%	0.11%	9.14%
1926	2.21%	68.14%	2.59%	4.99%	8.09%	0.74%	6.27%	0.39%	8.79%
1927	2.29%	67.46%	2.40%	5.22%	8.21%	0.77%	6.67%	0.50%	8.77%
1928	2.45%	67.06%	1.85%	5.23%	8.88%	0.80%	6.71%	0.64%	8.83%
1929	2.41%	69.40%	1.58%	5.19%	8.17%	0.66%	6.46%	0.42%	8.12%
1930	2.20%	72.05%	0.49%	4.87%	6.21%	0.62%	7.27%	0.43%	8.06%
1931	2.70%	79.49%	0.15%	3.60%	4.01%	0.32%	5.83%	0.31%	6.29%
1932	3.23%	82.24%	0.13%	2.91%	2.71%	0.23%	5.76%	0.30%	5.72%
1933	2.86%	81.12%	0.23%	3.15%	3.11%	0.24%	6.34%	0.32%	5.49%
1934	3.03%	80.35%	0.35%	3.30%	3.64%	0.27%	6.53%	0.27%	5.29%
1935	3.25%	80.69%	0.43%	3.24%	3.83%	0.28%	6.42%	0.25%	4.86%
1936	3.49%	80.03%	0.42%	3.25%	4.13%	0.29%	6.31%	0.24%	5.33%
1937	3.84%	81.33%	0.49%	2.95%	3.81%	0.30%	5.97%	0.25%	4.90%
1938	4.19%	77.54%	0.59%	4.04%	5.35%	0.58%	6.21%	0.31%	5.38%
1939	4.22%	77.44%	0.62%	3.68%	5.59%	0.56%	5.09%	0.26%	6.76%
1940	8.42%	87.44%	0.38%	2.00%	3.33%	0.26%	3.22%	0.13%	3.24%
1941	11.86%	86.60%	0.85%	1.82%	5.11%	0.28%	3.07%	0.11%	2.16%

Notes: Computations based directly on published tax return statistics (see Appendix Section C for details). Percentiles are based on average tax paid for each category.

Table 6C.2 Shares of each occupation within the top 10% in Canada, 1942

Fractile (1)	Number of Individuals (2)	Employees (3)	Entrepreneurs (4)	Rentiers (5)
P90–95	361,443	91.8%	6.9%	1.3%
P95–99	289,154	83.2%	14.1%	2.8%
P99–99.5	36,144	59.4%	33.5%	7.1%
P99.5–99.9	28,915	52.0%	36.5%	11.5%
P99.9–99.99	6,506	46.7%	30.0%	23.3%
P99.99–99.999	651	38.3%	18.1%	43.6%
P99.999–100	72	27.3%	8.1%	64.6%

Notes: Computations based on interpolations from *Taxation Statistics, 1947*: 108–10. See Appendix Section C. Category employees defined as employees and armed forces. Category entrepreneurs defined as agrarians, professionals, salesmen, and business proprietors. Category rentiers defined as financial and estates. Category All others excluded. Tax returns are classified in occupation categories by main source of income.

grouped occupations into three categories. The employees category is defined as employees and armed forces. The entrepreneurs category is defined as agrarians, professionals, salesmen, and business proprietors. The rentiers category is defined as financial and estates. The all others category is excluded. The results are reported in Table 6C.2.

### Composition Data from 1946–2000

We have constructed income composition series for each of our top groups (Tables 6C.3 and 6C.4) for the post the Second World War period when tables reporting the composition of income, by income brackets, started to be published. The composition series reported in Table 6C.3 indicate for each upper income group the fraction of total income (excluding capital gains) that comes from the various types of income (excluding capital gains). We consider six types of income: wage income; professional income; business income; dividends; interest income; and other investment income. Wage income includes wages and salaries, commissions from employment, as well as pensions. Wage income also includes profits from exercised stock options (which are reported as employment income on Canadian tax returns). Professional income includes self-employment income from professions such as doctors, lawyers, etc. Business income includes income from sole proprietorships, partnership income, and farm income. Dividends include only dividends distributed by Canadian corporations (and not dividends distributed by foreign companies to individuals in Canada). Interest includes interest income from banks, mortgages, and annuity income. Other investment income includes rents, fiduciary income, investment income from foreign sources, as well as a number of smaller items. We have excluded from these composition series a number of minor income categories such as alimony, taxable social security benefits, taxable unemployment insurance

Table 6C.3 Income composition by fractiles of total income (excluding capital gains) in Canada, 1946–2000

	P90–100				P95–100				P99–100				P99.5–100														
	Wage	Prof.	Busin.	Divid.	Interest	Invest.	Wage	Prof.	Busin.	Divid.	Interest	Invest.	Wage	Prof.	Busin.	Divid.	Interest	Invest.									
1946	72.9	4.0	14.6	3.2	2.2	3.2	1946	65.2	5.5	17.9	4.5	2.7	4.2	1946	45.5	10.1	24.3	8.7	4.3	7.2	1946	41.0	11.3	23.8	10.9	4.8	8.3
1947	71.4	4.0	16.6	3.2	1.9	2.9	1947	62.6	5.6	21.0	4.5	2.5	3.9	1947	43.7	9.7	28.1	8.4	3.7	6.4	1947	38.9	10.7	28.6	10.5	4.1	7.3
1948	71.9	3.7	16.6	3.3	1.7	2.8	1948	62.8	5.3	21.1	4.7	2.2	3.8	1948	44.0	9.2	28.2	9.0	3.4	6.2	1948	40.2	9.8	28.1	11.2	3.7	7.0
1949	71.8	4.1	16.5	3.3	1.6	2.8	1949	62.9	5.8	20.8	4.7	2.1	3.7	1949	44.3	10.0	27.3	9.0	3.2	6.2	1949	40.3	10.9	26.9	11.3	3.6	7.2
1950	71.9	4.4	15.7	3.5	1.7	2.9	1950	63.0	6.2	19.7	5.0	2.2	3.9	1950	44.0	10.8	26.1	9.4	3.3	6.5	1950	40.0	11.7	25.8	11.6	3.5	7.4
1951	73.0	4.4	14.8	3.2	1.4	3.1	1951	64.3	6.3	18.7	4.6	1.9	4.2	1951	45.8	11.2	24.1	8.7	3.0	7.2	1951	42.1	12.3	23.5	10.5	3.2	8.4
1952	73.9	4.5	14.0	3.3	1.5	2.9	1952	65.2	6.4	17.7	4.7	2.1	3.9	1952	45.7	11.7	23.1	9.3	3.4	6.8	1952	42.0	12.6	22.4	11.5	3.8	7.8
1953	74.6	4.5	13.2	3.2	1.6	3.0	1953	66.3	6.4	16.6	4.6	2.1	4.1	1953	46.8	11.8	21.9	9.1	3.5	6.9	1953	43.4	12.7	21.0	11.2	3.9	7.8
1954	76.4	5.1	10.5	3.3	1.9	2.9	1954	68.3	7.4	13.2	4.7	2.5	3.9	1954	48.8	13.7	17.2	9.3	4.2	6.8	1954	44.6	15.2	16.2	11.5	4.7	7.7
1955	75.8	5.4	10.5	3.8	1.9	2.7	1955	67.3	7.7	13.4	5.5	2.4	3.7	1955	46.6	14.6	17.9	11.0	3.9	6.1	1955	42.2	16.0	17.1	13.7	4.3	6.7
1956	76.2	5.7	10.5	3.1	1.8	2.7	1956	68.0	8.2	13.2	4.5	2.3	3.8	1956	47.1	16.0	17.4	9.0	3.8	6.7	1956	43.1	17.6	16.4	11.0	4.3	7.7
1957	77.9	5.5	9.0	3.0	1.9	2.6	1957	70.4	8.0	11.2	4.3	2.5	3.6	1957	51.2	15.7	13.9	8.7	4.2	6.4	1957	46.3	17.9	12.8	10.7	4.8	7.5
1958	76.4	6.0	9.5	3.1	2.2	2.8	1958	68.6	8.7	11.6	4.5	2.9	3.8	1958	50.7	16.5	13.0	8.7	4.5	6.6	1958	45.9	18.9	11.6	10.7	5.1	7.7
1959	77.4	5.8	8.6	3.1	2.3	2.9	1959	70.0	8.4	10.4	4.4	3.0	3.9	1959	51.8	16.4	11.9	8.5	4.8	6.7	1959	46.2	19.3	10.5	10.6	5.4	8.1
1960	77.7	6.0	7.7	3.1	2.6	2.8	1960	70.4	8.8	9.1	4.4	3.4	3.9	1960	52.7	17.0	9.7	8.7	5.3	6.6	1960	46.4	20.4	8.4	10.9	6.1	7.9
1961	77.6	6.2	7.4	3.1	2.8	2.9	1961	70.3	9.0	8.6	4.4	3.7	4.0	1961	52.8	17.3	9.0	8.4	5.5	7.1	1961	46.2	20.6	7.9	10.5	6.3	8.6
1962	77.9	6.1	7.3	3.1	3.0	2.6	1962	70.7	8.9	8.5	4.5	3.8	3.6	1962	53.1	17.7	8.5	8.7	5.8	6.2	1962	46.6	21.3	7.2	10.8	6.7	7.4
1963	78.1	6.3	7.3	2.9	2.9	2.6	1963	71.0	9.2	8.5	4.2	3.7	3.5	1963	54.0	18.7	8.0	7.7	5.4	6.2	1963	47.4	22.9	6.6	9.4	6.1	7.6
1964	77.1	6.5	7.7	3.4	3.0	2.4	1964	69.7	9.6	8.9	4.9	3.8	3.3	1964	52.5	19.3	8.1	9.2	5.4	5.5	1964	46.8	23.1	6.5	11.2	6.0	6.5
1965	77.1	6.7	7.7	3.5	2.9	2.0	1965	69.8	9.9	9.0	5.0	3.6	2.7	1965	51.9	20.4	8.2	9.5	5.3	4.7	1965	46.1	24.5	6.5	11.5	5.9	5.5
1966	77.6	6.5	7.6	3.4	2.8	2.1	1966	70.5	9.6	8.8	4.8	3.6	2.8	1966	53.1	20.2	7.8	9.2	5.2	4.6	1966	47.4	24.2	6.0	11.1	5.7	5.5
1967	78.1	6.7	7.1	3.3	2.9	1.9	1967	71.3	9.9	8.1	4.7	3.5	2.6	1967	54.3	20.4	7.3	8.7	5.1	4.2	1967	48.2	24.9	5.8	10.6	5.7	4.9
1968	79.0	6.8	5.8	3.2	3.3	2.3	1968	72.4	10.0	6.6	4.5	4.1	2.5	1968	55.3	21.1	5.7	8.3	5.7	4.0	1968	48.6	26.1	4.5	10.0	6.2	4.6
1969	79.9	6.9	4.7	3.0	3.7	1.8	1969	73.5	10.2	5.3	4.3	4.4	2.4	1969	55.8	21.8	4.7	7.8	6.1	3.8	1969	49.3	26.3	3.9	9.4	6.7	4.5
1970	80.4	7.0	4.0	2.8	4.0	1.9	1970	74.1	10.4	4.4	3.9	4.8	2.5	1970	55.2	22.9	3.8	7.2	6.8	4.1	1970	48.7	27.4	3.2	8.6	7.5	4.7
1971	80.8	7.3	3.9	2.4	3.8	1.9	1971	74.4	11.0	4.3	3.3	4.5	2.5	1971	54.9	24.9	4.0	5.9	6.3	4.1	1971	48.8	29.6	3.5	6.8	6.8	4.6
1972	80.4	7.2	4.4	2.1	3.8	2.1	1972	73.9	10.8	5.0	3.0	4.6	2.8	1972	54.9	24.2	4.4	5.7	6.5	4.3	1972	47.8	29.9	3.6	6.8	7.1	4.8
1973	77.9	7.4	6.4	2.2	4.0	2.1	1973	70.9	11.2	7.4	3.1	4.8	2.7	1973	52.0	24.5	7.0	5.9	6.6	4.1	1973	46.5	29.0	5.7	7.0	7.1	4.7
1974	76.1	7.0	7.2	2.2	5.2	2.3	1974	68.5	10.5	8.8	3.1	6.3	2.9	1974	49.7	22.1	9.8	5.6	8.7	4.2	1974	44.7	25.8	8.5	6.8	9.5	4.8
1975	76.9	6.8	6.8	2.2	5.2	2.2	1975	69.7	10.2	8.2	3.0	6.2	2.7	1975	51.8	21.0	9.3	5.6	8.4	4.0	1975	47.3	24.1	8.4	6.6	9.1	4.5
1976	78.8	6.7	4.9	2.0	5.5	2.2	1976	72.1	10.0	5.8	2.9	6.5	2.7	1976	52.4	22.1	6.4	5.6	9.3	4.3	1976	46.7	25.9	5.5	6.7	10.2	5.0



	P99,9-100					P99,99-100					P90-95					P95-99											
	Wage	Prof.	Busin.	Divid.	Interest Invest.	Wage	Prof.	Busin.	Divid.	Interest Invest.	Wage	Prof.	Busin.	Divid.	Interest Invest.	Wage	Prof.	Busin.	Divid.	Interest Invest.							
1977	80.2	6.4	3.7	2.1	5.4	2.2	1977	73.9	9.7	4.3	3.0	6.5	2.7	1977	54.5	21.4	4.4	6.1	9.4	4.2	1977	49.4	24.6	3.8	7.3	10.1	4.9
1978	78.2	6.3	3.4	4.1	5.8	2.1	1978	71.2	9.5	3.7	6.1	6.9	2.5	1978	52.0	19.7	3.0	11.8	9.5	4.0	1978	48.7	20.8	2.5	13.4	10.1	4.6
1979	76.9	6.1	3.4	4.8	6.5	2.2	1979	69.6	9.2	3.8	7.1	7.7	2.7	1979	50.3	18.7	2.5	13.5	10.7	4.3	1979	49.6	17.6	1.8	14.8	11.2	5.0
1980	76.4	6.0	2.5	5.2	7.5	2.4	1980	69.5	8.9	2.4	7.5	8.8	2.9	1980	53.8	15.6	1.3	13.2	11.8	4.3	1980	51.5	15.3	0.5	15.1	12.6	5.1
1981	74.5	5.6	2.6	5.6	9.2	2.4	1981	66.9	8.3	2.9	8.1	10.9	2.9	1981	48.1	15.8	2.4	15.0	14.5	4.3	1981	44.4	16.2	1.4	17.2	15.6	5.1
1982	76.2	5.4	2.1	5.5	8.7	2.2	1982	69.7	7.9	2.3	7.4	10.0	2.7	1982	53.4	14.9	2.2	12.6	12.7	4.2	1982	49.3	15.9	1.7	14.8	13.3	5.1
1983	79.6	6.0	1.8	4.8	6.1	1.8	1983	73.7	9.0	1.9	6.5	7.0	2.0	1983	57.6	18.4	1.6	10.8	8.9	2.6	1983	53.4	20.9	1.1	12.3	9.3	3.1
1984	80.5	6.2	1.8	3.9	5.8	1.8	1984	74.8	9.3	1.9	5.3	6.7	2.1	1984	58.5	19.2	1.8	9.3	8.5	2.7	1984	54.2	21.5	1.5	11.0	8.8	3.1
1985	80.8	5.8	1.5	3.9	6.2	1.9	1985	75.4	8.6	1.5	5.3	7.1	2.2	1985	60.9	17.2	0.9	9.3	8.7	3.0	1985	57.5	19.0	0.4	10.8	8.9	3.4
1986	81.1	6.0	1.5	3.7	5.6	2.0	1986	75.8	8.9	1.5	5.1	6.4	2.4	1986	61.6	17.6	0.8	8.9	7.9	3.3	1986	58.4	19.0	0.3	10.4	8.2	3.7
1987	81.4	5.8	1.8	3.4	4.9	2.8	1987	76.0	8.5	1.8	4.5	5.6	3.5	1987	62.6	16.6	1.2	7.7	6.9	5.1	1987	60.6	17.6	0.8	8.9	7.1	5.1
1988	80.5	5.8	2.2	3.2	5.2	3.1	1988	75.3	8.3	2.3	4.3	5.9	3.9	1988	63.4	15.2	2.5	6.8	6.9	5.3	1988	62.5	15.3	2.4	7.5	6.9	5.4
1989	78.5	6.2	2.2	3.5	6.4	3.2	1989	72.7	8.9	2.4	4.6	7.4	4.0	1989	60.1	15.5	2.8	7.5	8.8	5.3	1989	59.2	15.4	2.7	8.4	9.0	5.4
1990	78.1	6.3	1.9	3.2	7.4	3.1	1990	72.1	9.0	2.1	4.3	8.7	3.9	1990	57.7	16.1	2.4	7.2	11.1	5.4	1990	55.9	16.6	2.3	8.1	11.7	5.4
1991	79.3	6.4	1.5	3.2	6.4	3.3	1991	73.1	9.2	1.7	4.3	7.5	4.2	1991	58.0	17.0	2.0	7.6	9.9	5.5	1991	55.7	17.8	2.0	8.9	10.5	5.0
1992	81.3	6.7	1.5	2.7	4.7	3.3	1992	75.4	9.7	1.7	3.6	5.6	4.1	1992	59.9	18.6	2.1	6.3	7.8	5.5	1992	57.3	19.9	2.1	7.1	8.4	5.2
1993	81.9	6.7	1.5	2.5	3.6	3.9	1993	76.2	9.6	1.6	3.4	4.2	4.9	1993	62.2	18.1	1.9	5.7	5.8	6.3	1993	60.5	19.4	1.9	6.4	6.2	5.7
1994	82.1	6.5	1.7	2.5	3.0	4.2	1994	76.6	9.4	1.9	3.4	3.6	5.1	1994	63.1	17.6	2.2	5.7	5.0	6.4	1994	61.4	18.6	2.2	6.4	5.4	5.9
1995	80.8	6.6	1.9	2.7	3.7	4.4	1995	75.2	9.4	2.1	3.5	4.3	5.5	1995	62.7	17.0	2.2	5.9	5.8	6.4	1995	61.5	17.9	2.2	6.8	6.2	5.5
1996	80.0	6.7	2.1	2.9	3.3	4.9	1996	74.5	9.4	2.4	3.9	3.9	6.0	1996	62.6	16.6	2.7	6.5	4.9	6.7	1996	61.7	17.0	2.6	7.5	5.2	5.9
1997	80.5	6.9	2.2	3.1	2.6	4.7	1997	75.2	9.6	2.5	4.2	2.9	5.6	1997	64.4	16.3	2.5	6.9	3.6	6.2	1997	64.0	16.3	2.4	7.9	3.8	5.7
1998	80.6	6.6	2.1	3.4	2.5	4.8	1998	75.4	9.1	2.3	4.5	2.9	5.8	1998	65.0	15.0	2.3	7.4	3.7	6.7	1998	64.5	14.6	2.0	8.6	3.9	6.4
1999	80.2	6.6	2.4	3.7	2.5	4.6	1999	75.1	9.1	2.6	4.9	2.9	5.4	1999	64.7	14.4	2.9	7.8	3.7	6.4	1999	64.0	14.1	2.8	9.0	4.0	6.2
2000	80.5	6.5	2.2	3.6	2.7	4.6	2000	75.7	8.8	2.4	4.6	3.1	5.4	2000	67.1	13.5	2.3	7.2	3.8	6.1	2000	67.0	12.9	2.1	8.2	3.9	5.9

(cont'd.)

Table 6C.3 (Contd.)

P90-100					P95-100					P99-100					P99.5-100												
Year	Wage	Prof.	Busin.	Divid.	Interest	Invest.	Wage	Prof.	Busin.	Divid.	Interest	Invest.	Wage	Prof.	Busin.	Divid.	Interest	Invest.	Wage	Prof.	Busin.	Divid.	Interest	Invest.			
1955	33.6	15.1	15.8	22.3	5.1	8.2	1955	25.9	11.1	16.3	32.7	5.7	8.3	1955	91.6	1.0	5.2	0.6	0.8	0.9	1955	81.6	3.0	10.3	1.6	1.4	2.0
1956	36.3	17.0	14.7	16.5	5.2	10.2	1956	26.2	11.5	18.4	23.8	5.9	14.2	1956	91.4	0.9	5.5	0.6	0.7	0.9	1956	81.6	3.2	10.5	1.6	1.3	1.8
1957	39.3	17.6	10.5	16.2	6.3	10.1	1957	29.4	12.7	10.4	24.8	8.4	14.3	1957	91.7	0.9	5.0	0.6	0.8	0.9	1957	82.9	3.0	9.4	1.5	1.4	1.8
1958	40.0	17.8	8.8	16.5	6.6	10.3	1958	30.0	11.9	7.3	26.3	9.3	15.2	1958	90.9	1.0	5.7	0.6	1.0	0.9	1958	80.4	3.6	10.6	1.7	1.8	2.0
1959	41.1	17.3	8.0	15.7	6.9	11.0	1959	32.0	9.8	7.6	24.8	8.9	17.0	1959	91.1	0.9	5.3	0.6	1.1	1.0	1959	81.6	3.2	9.5	1.7	1.9	2.1
1960	40.5	18.7	6.1	16.3	7.7	10.7	1960	31.0	10.1	5.7	26.8	10.2	16.2	1960	91.1	0.9	5.1	0.7	1.3	0.9	1960	81.6	3.6	8.8	1.8	2.1	2.1
1961	39.4	18.7	6.3	15.4	7.9	12.3	1961	28.4	9.8	6.4	25.5	10.2	19.7	1961	91.0	0.9	5.2	0.6	1.3	0.9	1961	81.5	3.7	8.3	1.9	2.5	2.1
1962	40.3	20.1	5.3	15.8	8.4	10.2	1962	30.3	12.8	4.2	25.4	11.5	15.7	1962	91.1	0.9	5.1	0.6	1.5	0.8	1962	81.6	3.5	8.5	1.9	2.6	2.0
1963	41.8	22.5	4.4	13.3	7.4	10.7	1963	35.4	14.4	3.0	20.7	9.0	17.6	1963	91.0	0.9	5.3	0.6	1.5	0.8	1963	81.3	3.4	8.7	2.0	2.7	1.9
1964	41.0	22.2	4.7	16.4	7.2	8.6	1964	32.5	13.2	4.3	27.6	9.3	13.1	1964	90.7	0.9	5.4	0.7	1.5	0.8	1964	80.3	3.5	9.4	2.2	2.7	1.9
1965	41.0	23.0	4.6	16.8	7.1	7.6	1965	32.0	14.0	5.7	28.4	8.5	11.5	1965	90.6	1.0	5.4	0.8	1.6	0.7	1965	80.8	3.4	9.4	2.3	2.6	1.6
1966	42.1	22.6	4.3	16.5	6.9	7.6	1966	31.8	12.8	4.6	30.4	8.7	11.8	1966	90.5	0.8	5.6	0.8	1.5	0.8	1966	81.0	3.2	9.4	2.2	2.6	1.6
1967	43.0	23.9	3.8	15.7	7.1	6.6	1967	34.0	13.2	3.1	30.2	9.2	10.3	1967	90.6	1.0	5.3	0.8	1.6	0.7	1967	81.5	3.5	8.5	2.3	2.6	1.6
1968	43.0	25.1	3.4	14.8	7.6	6.2	1968	35.0	13.6	4.6	27.1	10.3	9.4	1968	91.0	0.9	4.5	0.9	2.0	0.8	1968	82.7	3.3	7.1	2.2	3.1	1.6
1969	42.4	26.2	3.0	14.0	8.1	6.2	1969	35.7	13.5	5.5	24.9	10.3	10.0	1969	91.6	0.9	3.7	0.8	2.3	0.7	1969	84.1	3.3	5.7	2.1	3.4	1.5
1970	39.6	30.0	1.9	12.5	9.5	6.5	1970	33.0	17.9	1.9	22.7	13.6	10.9	1970	91.7	0.9	3.2	0.8	2.6	0.8	1970	85.2	3.0	4.7	1.9	3.6	1.6
1971	38.2	35.3	2.4	9.8	8.0	6.3	1971	31.9	23.3	3.2	18.6	11.2	11.8	1971	91.9	0.9	3.1	0.8	2.4	0.9	1971	85.7	3.0	4.5	1.8	3.5	1.6
1972	42.0	30.6	2.6	10.0	8.5	6.3	1972	40.5	16.8	2.6	18.2	11.9	10.1	1972	91.7	0.8	3.5	0.6	2.3	1.1	1972	84.8	3.1	5.3	1.5	3.5	1.9
1973	45.1	26.1	4.2	9.9	8.5	6.2	1973	45.1	14.2	4.0	16.1	11.4	9.4	1973	90.3	0.8	4.5	0.7	2.5	1.2	1973	82.0	3.4	7.6	1.5	3.7	1.8
1974	45.1	20.9	6.9	9.4	11.2	6.6	1974	45.4	9.0	6.1	14.4	13.8	11.2	1974	89.5	0.9	4.4	0.6	3.3	1.3	1974	79.4	3.8	8.3	1.6	4.9	2.1
1975	51.1	17.9	5.8	9.0	10.4	5.8	1975	58.3	8.2	3.3	12.1	11.1	6.9	1975	89.5	1.0	4.3	0.6	3.3	1.2	1975	80.0	3.9	7.6	1.6	4.9	2.0
1976	47.9	19.5	4.9	8.9	12.0	6.9	1976	49.5	8.9	6.4	11.6	14.3	9.3	1976	89.8	1.2	3.5	0.6	3.7	1.3	1976	82.7	3.6	5.4	1.4	5.1	1.8
1977	49.8	18.2	2.7	10.1	12.1	7.1	1977	53.6	6.8	3.1	13.6	13.5	9.5	1977	90.5	1.0	2.9	0.6	3.6	1.4	1977	84.0	3.5	4.2	1.4	5.0	1.9
1978	47.2	15.3	1.1	18.0	11.6	6.9	1978	49.7	6.8	1.4	21.0	12.1	9.0	1978	89.5	1.1	2.9	1.0	4.0	1.4	1978	81.0	4.3	4.1	3.2	5.6	1.8
1979	47.9	12.8	-0.4	19.2	13.1	7.4	1979	49.0	5.8	-1.1	21.8	14.4	10.1	1979	89.0	1.1	2.9	1.1	4.4	1.5	1979	79.5	4.3	4.4	3.7	6.2	1.9
1980	48.6	11.4	-1.3	19.2	14.5	7.7	1980	50.0	6.4	-1.9	20.6	15.4	9.5	1980	87.8	1.2	2.5	1.5	5.4	1.6	1980	77.9	5.4	3.0	4.4	7.2	2.1
1981	44.0	9.7	0.1	20.7	17.9	7.6	1981	44.7	6.0	-0.2	20.9	19.2	9.5	1981	87.1	1.2	2.1	1.5	6.5	1.6	1981	76.7	4.4	3.3	4.5	9.0	2.1
1982	49.6	8.7	0.5	19.1	14.1	8.0	1982	47.1	1.9	0.5	26.1	12.5	12.0	1982	87.4	1.1	1.7	2.1	6.3	1.4	1982	79.2	3.7	2.4	4.4	8.5	1.8
1983	55.1	14.1	0.3	15.4	10.3	4.8	1983	63.7	3.2	-0.7	18.1	9.6	6.0	1983	89.5	1.0	1.6	2.0	4.5	1.4	1983	82.8	3.6	2.1	4.0	5.9	1.6
1984	56.0	14.0	0.8	15.4	9.3	4.5	1984	59.8	2.0	-0.9	25.8	7.7	5.7	1984	90.2	1.1	1.6	1.6	4.2	1.4	1984	84.3	3.5	2.0	3.0	5.6	1.7
1985	60.9	11.1	-0.7	14.8	9.4	4.6	1985	64.3	1.2	-2.4	23.4	8.3	5.3	1985	90.1	1.1	1.5	1.5	4.6	1.3	1985	83.9	3.5	1.8	2.9	6.1	1.7
1986	61.1	11.6	-0.6	14.0	8.8	5.0	1986	65.9	2.0	-1.6	19.8	7.9	6.1	1986	90.3	1.1	1.6	1.4	4.1	1.4	1986	84.1	3.8	1.9	2.8	5.5	1.9
1987	65.0	10.2	-0.1	12.3	7.4	5.2	1987	68.9	1.9	-1.1	19.7	6.8	3.9	1987	90.7	1.1	1.8	1.3	3.6	1.6	1987	84.2	3.6	2.2	2.6	4.8	2.6

	P99-99.5				P99.5-99.9				P99.9-99.99				P99.99-100														
	Wage	Prof.	Busin.	Divid.	Interest	Wage	Prof.	Busin.	Divid.	Interest	Wage	Prof.	Busin.	Divid.	Interest	Wage	Prof.	Busin.	Divid.	Interest	Invest.						
1988	69.4	6.9	2.5	8.6	6.9	5.7	1988	75.7	0.7	3.1	9.2	5.8	5.5	1988	90.1	1.2	1.9	1.3	3.9	1.8	1988	83.4	3.7	2.2	2.5	5.3	2.9
1989	66.3	6.4	3.0	10.0	8.8	5.6	1989	72.5	0.7	3.9	10.6	6.2	6.0	1989	89.4	1.3	1.7	1.2	4.6	1.8	1989	81.9	4.1	2.2	2.5	6.3	3.0
1990	60.5	8.7	2.5	9.9	12.7	5.8	1990	66.7	1.5	3.4	11.3	11.6	5.5	1990	89.4	1.3	1.4	1.1	5.1	1.6	1990	81.8	4.1	1.9	2.3	7.0	2.9
1991	59.8	9.7	2.0	12.2	12.2	4.1	1991	63.6	1.8	2.1	17.6	13.2	1.7	1991	90.5	1.3	1.1	1.1	4.3	1.8	1991	83.2	4.1	1.5	2.1	5.9	3.3
1992	62.9	11.2	2.5	8.8	9.9	4.7	1992	72.0	1.6	3.4	10.0	10.3	2.8	1992	91.9	1.2	1.1	1.0	3.0	1.8	1992	85.4	3.9	1.4	1.9	4.2	3.2
1993	68.7	10.0	1.6	7.7	7.2	4.8	1993	79.6	1.4	0.9	7.6	6.8	3.7	1993	92.1	1.3	1.2	1.0	2.4	2.1	1993	85.5	4.0	1.5	1.9	3.2	4.0
1994	68.3	9.5	2.3	7.9	6.4	5.6	1994	74.0	1.3	2.7	9.2	6.2	6.6	1994	92.0	1.3	1.4	1.0	2.0	2.4	1994	85.4	4.0	1.7	1.9	2.7	4.3
1995	68.4	8.9	2.0	9.1	7.3	4.3	1995	74.1	1.3	2.5	12.1	7.6	2.5	1995	91.1	1.4	1.5	1.0	2.5	2.6	1995	83.8	4.2	2.0	1.9	3.3	4.8
1996	67.8	8.4	2.7	10.4	5.7	5.1	1996	67.5	0.9	4.3	16.5	6.4	4.4	1996	90.7	1.4	1.6	1.1	2.3	2.9	1996	82.9	4.3	2.1	2.0	3.1	5.5
1997	70.9	8.1	1.8	11.0	3.7	4.5	1997	72.6	0.8	2.2	18.5	3.2	2.8	1997	91.0	1.4	1.7	1.0	1.8	3.0	1997	83.5	4.5	2.4	2.0	3.4	5.2
1998	70.3	6.5	1.5	11.9	3.9	5.9	1998	72.0	0.4	0.9	19.4	3.6	3.8	1998	91.3	1.4	1.8	1.1	1.6	2.8	1998	83.8	4.5	2.3	2.1	2.2	5.1
1999	68.1	6.6	2.5	12.7	4.1	6.0	1999	67.0	0.7	1.8	20.9	3.3	6.3	1999	90.9	1.5	1.9	1.4	1.6	2.8	1999	83.7	4.6	2.4	2.5	2.2	4.6
2000	72.4	5.8	1.7	10.9	4.0	5.3	2000	74.3	0.4	0.5	15.2	3.2	6.5	2000	90.9	1.5	1.8	1.2	1.9	2.8	2000	83.2	4.7	2.4	2.3	2.6	4.8

(cont'd.)

Table 6C.3 (Contd.)

	P90-100				P95-100				P99-100				P99.5-100							
	Wage	Prof.	Busin.	Divid.	Interest	Invest.	Wage	Prof.	Busin.	Divid.	Interest	Invest.	Wage	Prof.	Busin.	Divid.	Interest	Invest.		
1971	66.5	15.9	4.9	4.1	5.4	3.2	1971	54.4	26.6	4.1	5.2	6.1	3.6	1971	39.8	38.4	2.1	7.6	7.2	5.0
1972	68.4	13.5	6.1	3.5	5.3	3.2	1972	50.9	29.5	4.1	5.1	6.3	4.0	1972	42.4	34.2	2.6	7.8	7.6	5.3
1973	62.3	16.1	9.3	3.7	5.5	3.1	1973	47.3	30.5	6.5	5.4	6.4	3.9	1973	45.1	29.4	4.3	8.2	7.7	5.3
1974	59.0	15.1	12.0	3.5	7.2	3.2	1974	44.5	28.5	9.5	5.3	8.5	3.8	1974	45.0	24.4	7.1	7.9	10.4	5.2
1975	60.1	15.1	11.0	3.6	7.1	3.1	1975	45.2	27.7	9.9	5.3	8.3	3.7	1975	48.8	20.8	6.6	8.1	10.2	5.5
1976	62.6	15.2	8.0	3.5	7.7	2.9	1976	46.0	29.5	5.9	5.5	9.2	4.0	1976	47.4	22.7	4.4	8.1	11.3	6.1
1977	63.6	15.8	5.5	4.1	8.1	3.0	1977	49.2	28.1	4.4	5.7	9.0	3.6	1977	48.7	21.6	2.6	9.1	11.7	6.4
1978	57.9	17.8	4.0	9.0	8.5	2.9	1978	49.5	23.9	3.2	10.8	9.3	3.3	1978	46.4	17.9	1.0	17.0	11.5	6.3
1979	51.6	20.8	3.8	11.1	9.7	3.1	1979	50.6	20.3	3.0	12.4	10.2	3.6	1979	47.6	14.9	-0.2	18.4	12.7	6.6
1980	57.9	16.2	2.8	9.8	10.4	3.0	1980	53.1	17.5	1.6	12.7	11.5	3.7	1980	48.2	12.7	-1.1	18.8	14.3	7.2
1981	54.8	15.1	4.0	10.9	12.4	2.8	1981	44.6	19.9	2.1	15.3	14.4	3.7	1981	43.7	10.8	0.2	20.6	17.5	7.1
1982	61.6	13.1	3.2	8.4	11.4	2.4	1982	49.1	20.9	2.5	11.7	12.8	3.1	1982	50.7	11.4	0.5	16.3	14.8	6.4
1983	66.0	13.7	2.7	8.0	8.0	1.7	1983	52.2	25.2	1.5	10.4	8.7	2.0	1983	52.0	18.1	0.7	14.3	10.5	4.4
1984	67.5	14.3	2.5	5.8	7.9	2.0	1984	52.9	26.8	1.9	7.9	8.5	2.1	1984	54.4	19.0	1.6	11.0	10.0	4.0
1985	67.7	13.7	1.9	6.2	8.3	2.3	1985	55.2	24.4	1.1	8.1	8.6	2.6	1985	59.4	15.2	0.0	11.2	9.8	4.3
1986	68.1	14.6	1.8	5.7	7.4	2.4	1986	56.5	24.1	0.9	8.0	7.8	2.8	1986	59.2	15.4	-0.1	11.7	9.2	4.6
1987	66.7	14.6	2.0	5.4	6.4	4.9	1987	57.5	22.8	1.4	6.4	6.8	5.1	1987	63.4	13.6	0.3	9.2	7.7	5.8
1988	65.5	14.8	2.7	5.2	6.8	5.1	1988	56.6	22.5	2.4	6.5	6.9	5.2	1988	66.1	10.1	2.1	8.3	7.5	5.8
1989	62.3	15.7	3.0	5.4	8.5	5.2	1989	52.6	23.6	2.4	6.9	9.2	5.3	1989	62.6	9.9	2.4	9.6	10.3	5.3
1990	62.0	15.1	2.5	5.2	9.8	5.4	1990	52.0	23.2	2.2	6.7	10.9	5.1	1990	57.3	12.4	2.0	9.2	13.2	5.9
1991	63.4	15.1	2.0	4.6	8.5	6.4	1991	52.3	24.4	2.0	6.3	9.2	5.8	1991	57.8	13.8	2.0	9.4	11.7	5.3
1992	65.7	15.5	1.9	4.3	6.4	6.2	1992	53.0	26.7	1.9	5.8	7.1	5.5	1992	58.4	16.0	2.0	8.3	9.8	5.6
1993	66.1	15.3	2.0	4.1	4.8	7.8	1993	53.9	26.9	2.1	5.3	5.4	6.3	1993	63.2	14.3	1.9	7.8	7.4	5.4
1994	67.0	15.1	2.3	3.9	4.2	7.5	1994	55.9	25.8	2.1	5.3	4.6	6.2	1994	65.6	13.4	2.1	7.3	6.5	5.1
1995	65.5	14.9	2.4	3.9	4.9	8.4	1995	55.9	25.2	2.3	4.9	5.2	6.5	1995	65.7	12.7	1.8	7.6	7.1	5.2
1996	64.8	15.5	2.8	4.1	4.4	8.5	1996	56.6	24.4	2.6	5.1	4.7	6.7	1996	67.9	12.0	1.9	7.4	5.4	5.4
1997	65.5	16.3	3.0	4.3	3.4	7.6	1997	57.6	23.9	2.9	5.1	3.8	6.8	1997	70.1	11.7	1.5	7.3	4.0	5.4
1998	66.2	15.9	3.0	4.3	3.2	7.4	1998	59.0	22.3	2.6	5.4	3.9	6.9	1998	69.4	9.7	1.8	8.0	4.1	5.0
1999	66.8	15.5	3.2	4.4	3.1	7.0	1999	59.8	21.5	3.1	5.3	3.8	6.5	1999	68.7	9.9	2.9	8.0	4.6	5.8
2000	67.6	15.4	2.9	4.3	3.3	6.6	2000	61.2	20.5	2.6	5.3	3.9	6.7	2000	71.3	8.8	2.4	8.5	4.4	4.6

Notes: Wage is defined as wages and salaries, pensions, and other employment earnings (such as bonuses, stock-option exercises, etc.). Prof. is professional income defined as self-employment income from professions such as doctors, lawyers, etc. Busin. is business income defined as net profits from sole proprietorships, partnerships, and other small businesses (such as farm and fishing). Divid. defined as dividends from Canadian corporations. Interest includes bond and bank interest income as well as annuities. Invest. includes all other investment income such as estate and trust income, foreign investment income, etc. All details in Appendix Section C. The sums of all sources add up to 100%. Capital Gains are excluded.

**Table 6C.4 Share of capital gains in total income for upper groups in Canada, 1972–2000 (capital gains are expressed in % of total income (including capital gains) of each group)**

A. Fractiles defined by total income excluding capital gains												B. Fractiles defined by total income including capital gains																
P90–100			P95–100			P99–100			P99.5–100			P99.9–100			P99.99–100			P99.999–100			P99.9999–100							
1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
0.9	1.7	2.0	2.8	4.7	0.4	1.3	1.5	2.2	4.7	1972	1.2	2.7	3.8	4.6	7.5	17.2	0.2	0.5	2.1	3.0	4.7	17.2	0.2	0.5	2.1	3.0	4.7	17.2
0.6	1.1	2.1	3.3	6.1	0.4	0.5	1.6	1.7	2.5	1973	1.5	3.4	4.6	5.6	9.2	21.9	0.4	0.7	2.6	3.5	5.4	21.9	0.4	0.7	2.6	3.5	5.4	21.9
0.8	1.0	1.7	1.9	2.6	4.2	0.4	0.6	1.5	2.0	1974	1.4	2.9	3.8	4.5	7.0	15.4	0.5	0.8	2.4	3.1	4.4	15.4	0.5	0.8	2.4	3.1	4.4	15.4
1.0	1.2	2.1	3.2	4.9	0.6	0.7	1.8	1.7	2.6	1975	1.6	3.4	4.5	5.4	8.5	17.7	0.5	0.9	2.9	3.5	5.4	17.7	0.5	0.9	2.9	3.5	5.4	17.7
1.4	1.7	3.1	3.5	4.7	6.8	0.8	0.9	2.5	2.7	1976	1.4	6.8	8.0	12.4	23.9	0.8	1.2	4.1	5.5	8.6	23.9	0.8	1.2	4.1	5.5	8.6	23.9	
1.6	2.1	4.0	4.3	6.5	9.2	0.8	1.0	3.4	3.0	1977	2.5	5.6	7.6	8.7	13.1	17.6	0.8	1.3	5.6	6.1	11.5	17.6	0.8	1.3	5.6	6.1	11.5	17.6
2.2	2.9	5.6	6.1	9.2	11.5	1.0	1.3	4.6	4.1	1978	3.4	7.6	10.4	12.1	18.3	21.4	1.0	1.7	7.5	8.3	17.2	21.4	1.0	1.7	7.5	8.3	17.2	21.4
3.4	4.5	8.9	9.5	14.1	17.9	1.4	1.8	7.6	6.3	1979	5.1	12.0	16.3	19.6	30.3	47.5	0.9	2.5	10.0	12.6	23.4	47.5	0.9	2.5	10.0	12.6	23.4	47.5
4.1	5.4	9.9	11.1	15.9	17.6	1.7	2.5	7.5	7.6	1980	6.1	14.2	18.4	22.8	33.8	46.9	1.0	3.4	9.9	15.2	28.6	46.9	1.0	3.4	9.9	15.2	28.6	46.9
4.0	7.9	9.4	14.2	17.0	1.1	1.6	4.9	5.9	13.1	1981	4.6	10.9	14.9	19.4	30.6	45.5	0.7	2.2	6.5	11.9	24.7	45.5	0.7	2.2	6.5	11.9	24.7	45.5
1.4	1.9	3.7	4.4	6.2	7.2	0.5	0.9	2.0	3.2	1982	2.6	5.9	7.8	10.0	14.8	20.4	0.4	1.2	3.3	6.4	12.4	20.4	0.4	1.2	3.3	6.4	12.4	20.4
2.0	2.8	4.9	5.9	7.6	6.4	0.8	1.5	2.8	4.7	1983	3.5	7.7	10.1	12.5	18.7	28.1	0.8	2.1	5.2	8.1	14.9	28.1	0.8	2.1	5.2	8.1	14.9	28.1
1.7	2.3	4.1	5.0	6.2	4.8	0.6	1.1	2.3	4.1	1984	2.9	6.4	8.3	10.2	15.0	21.7	0.7	1.7	4.1	6.7	12.0	21.7	0.7	1.7	4.1	6.7	12.0	21.7
2.6	3.4	5.8	6.8	9.1	12.9	1.1	1.9	3.7	5.1	1985	4.3	9.2	11.6	14.2	21.0	28.3	1.0	2.7	6.0	9.0	17.7	28.3	1.0	2.7	6.0	9.0	17.7	28.3
3.9	5.2	8.4	9.5	12.0	11.9	1.8	3.2	6.0	7.7	1986	6.7	13.5	16.1	18.2	24.3	31.7	1.6	5.2	11.6	13.7	21.0	31.7	1.6	5.2	11.6	13.7	21.0	31.7
5.6	7.2	11.4	12.6	14.5	15.1	2.6	4.5	8.9	11.3	1987	9.6	20.2	24.5	27.2	32.4	41.6	1.7	6.3	18.3	23.0	28.1	41.6	1.7	6.3	18.3	23.0	28.1	41.6
6.0	9.2	10.1	10.9	7.2	2.1	3.7	7.2	9.4	12.7	1988	8.2	17.1	20.8	23.5	28.7	26.7	1.4	4.6	14.1	18.8	29.7	26.7	1.4	4.6	14.1	18.8	29.7	26.7
6.2	8.0	12.3	13.6	14.5	8.0	2.6	4.6	9.2	12.7	1989	10.0	20.1	24.0	27.2	33.2	32.5	1.6	5.4	15.3	21.1	33.6	32.5	1.6	5.4	15.3	21.1	33.6	32.5
3.1	3.9	5.6	5.8	5.8	4.0	1.6	2.7	5.1	5.9	1990	5.5	11.5	14.0	15.9	18.2	10.3	1.1	3.3	9.4	14.1	21.9	10.3	1.1	3.3	9.4	14.1	21.9	10.3
3.1	4.0	6.2	6.8	7.1	7.5	1.5	2.5	5.0	6.5	1991	5.5	11.7	14.6	17.2	21.3	16.3	1.0	2.9	8.2	13.8	23.8	16.3	1.0	2.9	8.2	13.8	23.8	16.3
3.7	4.7	7.1	7.7	7.8	5.7	1.7	3.1	5.7	7.7	1992	6.4	13.8	17.4	20.6	26.8	16.5	1.1	3.2	9.5	15.6	31.4	16.5	1.1	3.2	9.5	15.6	31.4	16.5
5.5	6.9	10.0	10.5	10.7	10.0	2.7	4.7	8.9	10.3	1993	9.5	19.7	24.2	27.9	32.7	25.0	1.7	5.1	15.0	24.0	36.3	25.0	1.7	5.1	15.0	24.0	36.3	25.0
3.8	5.0	8.9	10.4	10.4	7.7	1.6	2.2	5.4	10.4	1994	6.6	14.2	21.6	27.7	31.6	19.3	1.0	2.3	9.1	24.3	38.0	19.3	1.0	2.3	9.1	24.3	38.0	19.3
3.5	3.6	5.5	6.0	6.3	4.5	1.2	2.2	4.2	5.7	1995	4.6	10.1	13.1	16.0	20.6	17.4	0.7	1.8	5.7	12.2	22.1	17.4	0.7	1.8	5.7	12.2	22.1	17.4
3.3	4.2	6.5	7.1	8.0	7.5	1.4	2.6	4.8	6.4	1996	5.4	11.1	13.9	16.5	20.8	22.8	1.1	2.6	7.2	12.6	19.7	22.8	1.1	2.6	7.2	12.6	19.7	22.8
4.2	5.3	7.8	8.2	7.6	5.4	1.9	3.3	6.8	8.8	1997	6.7	12.8	15.5	17.9	21.9	25.1	1.6	3.6	8.7	14.1	20.2	25.1	1.6	3.6	8.7	14.1	20.2	25.1
4.1	5.2	7.4	7.9	8.7	4.9	1.8	3.4	6.2	7.1	1998	6.4	12.2	14.9	17.2	19.9	22.1	1.4	3.2	8.4	14.4	18.8	22.1	1.4	3.2	8.4	14.4	18.8	22.1
4.2	5.2	7.3	7.3	6.7	5.4	1.9	3.5	7.2	7.8	1999	6.7	12.4	14.9	17.2	19.4	19.6	1.5	3.6	8.5	14.9	19.3	19.6	1.5	3.6	8.5	14.9	19.3	19.6
6.4	7.8	10.4	11.0	10.6	6.7	3.1	5.4	8.5	11.4	2000	9.9	17.5	20.6	23.2	24.9	26.6	2.4	5.7	12.3	21.3	24.0	26.6	2.4	5.7	12.3	21.3	24.0	26.6

Notes: In Panel A, tax returns are ranked by total income excluding capital gains. Series report the additional income reported in the form of capital gains. The share of capital gains reported is the share of total income including capital gains. For example, the top decile (defined by income excluding capital gains) in 2000 earned 6.4% of total income (including capital gains) in the form of capital gains. In Panel B, tax returns are ranked by total income including full realized capital gains. The series report the share of total income (including capital gains) accruing in the form of capital gains. Details on estimation are presented in Appendix Section C.

benefits, etc. Taken all together, these minor categories never make more than 2% of the total income of the top decile (they usually make less than 1%), and even less at the level of the top percentile, and excluding them simplifies the reading of our composition series (these minor income categories were taken into account when computing top income levels and top income shares in total income).<sup>40</sup> For the period after 1982, the composition series were computed directly from the LAD microfiles. For the 1946–81 period, the composition series were estimated from the published tables in *Taxation Statistics* indicating for each income bracket not only the number of taxpayers and the total amount of their total income but also the separate amounts for each type of income, as well as the deductions, and tax liability. The composition of income within each group was estimated from these tables using a simple linear interpolation method. Such a method is less satisfactory than the Pareto interpolation method used to estimate top income levels (no obvious law seems to fit composition patterns in a stable way), but microfiles show that the resulting estimates are still relatively precise: estimation errors are always less than 2 percentage points, and they are usually much smaller (thanks to the fact that published tables are usually based on a very large number of income brackets).

The composition series reported in Table 6C.4 indicate for each income group the fraction of total income (including capital gains) that takes the form of capital gains for the period 1972–2000. The concept of capital gains used to compute these series is again ‘full capital gains’, i.e., total pre-exclusion capital gains. We provide two sets of estimates in Table 6C.4 corresponding to the two ways we treated capital gains to compute top income shares (see Panel A and B in Table 6B.2). In the left panel, we report the fraction of capital gains for incomes ranked excluding capital gains (as in Panel B of Table 6B.2). In the right panel, we report the fraction of capital gains for incomes ranked including full capital gains (as in Panel A of Table 6B.2). For the period starting in 1982, these series were computed using the LAD microfiles. For the period 1972–81, a direct linear extrapolation from published tables yields capital gains shares series for groups of income (including the post-exclusion amount of capital gains), and one needs to correct these raw estimates in order to take re-ranking into account (see Appendix 6B above). That is, capital gains shares are smaller for groups ranked by income excluding capital gains than for groups ranked by income including post-exclusion capital gains (as in the published tables), and capital gains shares are smaller for groups ranked by income including post-exclusion capital gains than for groups ranked by income including pre-exclusion capital gains. Microfiles allowed us to compute the magnitudes of these correction coefficients.<sup>41</sup> The capital gains shares series reported in Table 6C.4 demonstrate that re-ranking is substantial at the very top. For example, in 2000, 26.6% of total income reported by the fractile P99.99–100 of the distribution of

<sup>40</sup> The fact that these minor income categories almost do not matter for top incomes implies that changes in tax law regarding those items (e.g., changes in the definition of family allowances or unemployment benefits) have negligible consequences for our income levels and shares series.

<sup>41</sup> The correction formulas for capital gains shares that we inferred from microfiles are more complex than those applied to correct income levels, and they are available upon request.

income including capital gains takes the form of capital gains, but the capital gains share falls to 6.7% when one looks at the fractile P99.99–100 of the distribution of income excluding capital gains.

#### APPENDIX 6D: WAGES AND SALARIES SERIES

Top wage shares are estimated by Pareto interpolation from the LAD distribution tables from 1982 to 2000 and from *Taxation Statistics* published tables from 1972 to 1981. The total wage denominator is taken as equal to total employment reported on tax returns. Employment income on tax returns includes wages and salaries, commissions from employment, and other employment income. Wages and salaries include taxable allowances and benefits, bonuses and directors' fees as well as the value of stock option exercises. Total employment income on tax returns is always very close to 95% of wages and salaries (excluding supplementary labour income) from National Accounts with very little fluctuation over the period 1972–2000. The total number of wage earners is also estimated from LAD (1982–2000) and *Taxation Statistics* (1972–1981) as the number of returns with positive wages and salaries. This statistic fluctuates around 100% of the National Accounts estimate of the number of full-time plus part-time employees with no trend over the period (the ratio is always between 98% and 102%). Total employment income and the total number of tax returns with positive wages and salaries are reported from 1972 to 2000 in Table 6D.1.

We estimate two series of top wage income shares. The first series, reported in Panel A of Table 6D.2, are estimated at the individual level (as is our income series). The second series, reported in Panel B, are wage income shares estimated at the family level whereby we add employment income of married couples. In that case, the total number of units (relative to which the upper groups are defined) is the total number of families with positive wage income in the LAD microfiles. The family series are limited to the period 1982–2000 when the LAD micro-data are available (as there is no information on earnings by couples in the published statistics). We use the same type of Pareto interpolation methods described in Appendix 6B to estimate these top wage shares from distribution tables by size of employment income obtained from the LAD microfiles beginning in 1982.

Using the composition tables published in *Taxation Statistics* from 1972 to 1981, we are able to extend our individual wage shares series back to 1972. Starting in 1972, the composition tables by brackets of total income give not only the amounts of wages and salaries reported but also the number of tax returns with positive wages and salaries. We use this information to obtain a preliminary distribution of wage income as follows.

Average wage income for wage earners and average gross income for each gross income bracket are computed. We then assume that each gross income bracket corresponds to a wage income bracket with thresholds equal to the actual gross income thresholds multiplied by the ratio of average wage income to average

Table 6D.1 Aggregate series on wages in Canada, 1972–2000

	Total number of employees (in thousands)	Number of families with wage (in thousands)	Total wage Income (in millions of 2000 dollars)	Average individual wage (in 2000 dollars)	Average family wage (in 2000 dollars)	Consumer Price Index (CPI) (base 100 in 2000)
	(1)	(2)	(3)	(4)	(5)	(6)
1972	8,541		232,780	27,255		22.996
1973	8,955		250,139	27,933		24.758
1974	9,419		268,249	28,480		27.401
1975	9,648		281,100	29,135		30.396
1976	9,869		303,667	30,768		32.687
1977	10,014		309,893	30,945		35.242
1978	10,328		310,055	30,021		38.414
1979	10,772		319,123	29,625		41.938
1980	11,069		328,688	29,694		46.167
1981	11,420		333,827	29,232		51.894
1982	11,256	8,328	320,869	28,507	38,530	57.533
1983	11,185	8,290	314,970	28,160	37,996	60.881
1984	11,402	8,446	323,321	28,357	38,279	63.524
1985	11,582	8,548	330,655	28,549	38,682	66.079
1986	12,079	8,933	343,190	28,413	38,419	68.811
1987	12,312	9,001	351,459	28,547	39,046	71.806
1988	12,623	9,218	371,880	29,461	40,344	74.714
1989	12,962	9,389	386,737	29,836	41,189	78.414
1990	13,073	9,511	384,702	29,427	40,447	82.203
1991	12,916	9,476	370,462	28,683	39,097	86.784
1992	12,869	9,412	374,704	29,117	39,813	88.106
1993	12,903	9,460	374,313	29,011	39,568	89.692
1994	13,021	9,569	382,823	29,402	40,008	89.868
1995	13,195	9,718	388,505	29,443	39,979	91.806
1996	13,297	9,772	391,518	29,445	40,067	93.304
1997	13,615	9,989	407,506	29,932	40,797	94.802
1998	13,844	10,157	425,961	30,768	41,937	95.683
1999	14,233	10,432	443,824	31,183	42,543	97.357
2000	14,688	10,534	466,028	31,729	44,239	100.000

Notes: Total number of part-time and full time employees from number of tax returns reporting positive wages and salaries. Families defined as the sum of married couples and single individuals reporting positive wages and salaries. Total employment income reported on tax returns (sum of wages and salaries, commissions from employment and other employment income). Average individual wage in column (4) is column (3) divided by column (1). Average family wage in column (5) is column (3) divided by column (2). All amounts are reported in 2000 Canadian dollars. See Appendix Section D for details.

gross income in that bracket. In order to generate brackets fitting together, the final thresholds are taken as equal to the average of the corresponding top and bottom thresholds of two adjacent brackets. We therefore obtain a set of wage bracket thresholds where the number of returns and the wage amount reported for each bracket is the same as in the original composition table. This new distribution by size of wages is not perfectly accurate because ranking in terms of gross income is not identical to ranking in terms of wages. From this con-



Table 6D.2 Shares of wage income for upper groups in Canada, 1972–2000

	P90–100	P95–100	P99–100	P99.5–100	P99.9–100	P99.99–100	P90–95	P95–99	P99–99.5	P99.5–99.9	P99.9–99.99
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<b>Panel A: Individuals</b>											
1972	27.22	16.80	5.59	3.51	1.12	0.19	10.41	11.21	2.08	2.40	0.92
1973	27.31	16.93	5.79	3.69	1.24	0.23	10.38	11.14	2.11	2.45	1.00
1974	26.92	16.57	5.65	3.59	1.26	0.26	10.35	10.92	2.06	2.33	1.00
1975	26.97	16.56	5.76	3.70	1.40	0.32	10.41	10.80	2.06	2.30	1.08
1976	26.20	16.02	5.19	3.38	1.13	0.23	10.19	10.83	1.81	2.24	0.90
1977	26.10	15.79	5.04	3.25	1.10	0.23	10.31	10.75	1.78	2.15	0.87
1978	25.82	15.42	4.74	3.05	1.05	0.22	10.40	10.69	1.68	2.01	0.82
1979	26.30	15.74	5.09	3.25	1.10	0.23	10.56	10.65	1.84	2.16	0.87
1980	26.65	16.10	5.28	3.34	1.17	0.26	10.55	10.82	1.94	2.16	0.91
1981	26.44	15.79	4.94	3.10	1.08	0.24	10.65	10.85	1.84	2.02	0.84
1982	27.37	16.57	5.55	3.63	1.50	0.41	10.79	11.02	1.92	2.14	1.09
1983	27.52	16.59	5.54	3.63	1.49	0.42	10.92	11.05	1.92	2.14	1.07
1984	27.65	16.72	5.68	3.75	1.58	0.46	10.92	11.05	1.93	2.18	1.11
1985	27.80	16.89	5.84	3.91	1.68	0.51	10.91	11.05	1.94	2.22	1.18
1986	28.00	17.04	5.89	3.92	1.67	0.50	10.96	11.14	1.97	2.26	1.17
1987	28.28	17.35	6.21	4.21	1.85	0.55	10.94	11.14	2.00	2.36	1.30
1988	29.04	18.27	7.11	5.05	2.47	0.86	10.77	11.16	2.05	2.58	1.61
1989	29.43	18.70	7.55	5.47	2.80	1.10	10.73	11.15	2.08	2.67	1.71
1990	29.05	18.18	6.93	4.87	2.32	0.82	10.87	11.25	2.07	2.55	1.50
1991	29.22	18.21	6.80	4.73	2.20	0.75	11.01	11.41	2.07	2.53	1.45
1992	29.21	18.16	6.78	4.73	2.22	0.78	11.06	11.38	2.05	2.51	1.44
1993	29.59	18.51	7.11	5.04	2.46	0.86	11.08	11.41	2.07	2.58	1.60
1994	29.75	18.68	7.20	5.09	2.42	0.79	11.08	11.48	2.11	2.67	1.63
1995	30.15	19.10	7.59	5.38	2.57	0.84	11.06	11.51	2.21	2.81	1.73
1996	30.73	19.66	8.06	5.78	2.78	0.84	11.07	11.61	2.28	3.00	1.94
1997	31.66	20.64	8.90	6.56	3.30	1.08	11.02	11.74	2.34	3.26	2.22
1998	32.16	21.17	9.31	6.90	3.52	1.17	10.99	11.86	2.42	3.38	2.35
1999	32.35	21.40	9.48	7.02	3.58	1.21	10.95	11.92	2.45	3.44	2.37
2000	33.50	22.57	10.51	7.97	4.30	1.50	10.93	12.06	2.54	3.67	2.80

(contd.)

Table 6D.2 (Contd.)

	P90-100 (1)	P95-100 (2)	P99-100 (3)	P99.5-100 (4)	P99.9-100 (5)	P99.99-100 (6)	P90-95 (7)	P95-99 (8)	P99-99.5 (9)	P99.5-99.9 (10)	P99.9-99.99 (11)
<b>Panel B: Families</b>											
1982	27.53	16.49	5.26	3.39	1.38	0.37	11.05	11.22	1.87	2.01	1.02
1983	27.84	16.66	5.30	3.41	1.39	0.39	11.19	11.36	1.89	2.02	1.00
1984	28.06	16.86	5.48	3.58	1.53	0.45	11.19	11.39	1.90	2.05	1.08
1985	28.29	17.08	5.64	3.74	1.60	0.48	11.20	11.45	1.90	2.13	1.12
1986	28.66	17.33	5.68	3.73	1.54	0.45	11.33	11.64	1.95	2.19	1.10
1987	28.99	17.68	6.04	4.06	1.78	0.53	11.31	11.64	1.98	2.29	1.24
1988	29.71	18.47	6.87	4.77	2.29	0.73	11.24	11.61	2.10	2.47	1.56
1989	30.11	18.91	7.29	5.17	2.62	0.99	11.20	11.62	2.12	2.55	1.64
1990	30.01	18.58	6.72	4.65	2.18	0.77	11.43	11.86	2.07	2.46	1.41
1991	30.39	18.76	6.64	4.56	2.09	0.72	11.63	12.12	2.09	2.47	1.37
1992	30.38	18.71	6.53	4.46	2.02	0.67	11.67	12.18	2.07	2.44	1.35
1993	30.80	19.14	6.93	4.85	2.29	0.79	11.67	12.20	2.09	2.56	1.50
1994	30.98	19.27	7.01	4.87	2.23	0.70	11.71	12.26	2.14	2.64	1.54
1995	31.40	19.66	7.32	5.13	2.37	0.74	11.74	12.34	2.19	2.76	1.63
1996	31.87	20.12	7.77	5.44	2.51	0.72	11.75	12.35	2.33	2.93	1.79
1997	32.70	20.99	8.57	6.16	2.99	0.93	11.71	12.42	2.42	3.17	2.06
1998	33.21	21.55	9.00	6.51	3.24	1.03	11.66	12.55	2.49	3.27	2.21
1999	33.46	21.80	9.19	6.65	3.30	1.06	11.67	12.61	2.53	3.35	2.24
2000	34.57	22.83	10.08	7.50	3.85	1.25	11.74	12.76	2.58	3.65	2.60

Notes: Shares computed from tax return statistics and total number of wage earners and total wage bill from Table D1. All details in Appendix Section D. For example, in 2000, the top 10% individual wage and salary earners earned 33.50% of total wages and salaries in Canada.

structured wage income distribution, we compute average income levels and shares for each of our top income groups. The levels and shares are underestimated using this method because ranking in terms of total income is not identical to ranking in terms of wages and salaries. (See Table 6D.3.)

This method is therefore reliable only if wage income is a substantial fraction of income bracket by bracket. This is true below the top percentile but not for the top wage income groups. However, using years 1982–2000 where both the micro-files and the published composition tables are available, we can estimate by how much levels and shares estimated from published tables for each top income group should be adjusted to match estimates from the micro-files. Fortunately, these multiplier factors are extremely stable from 1982 to 2000 (the maximum variation between multipliers is always less than 10%). Therefore, we can use the multipliers from year 1982 to adjust the levels and shares for years 1972 to 1981.<sup>42</sup>

We repeat these computations for all provinces excluding Quebec and for Francophones in Quebec separately for years 1982–2000.<sup>43</sup> Each tax return identifies the province of residence, and Francophones and Anglophones within Quebec are identified according to the language of their tax returns. For these series, the total number of individuals is defined as the number of individuals in the LAD microfiles in that particular group with positive wages and salaries, and the total amount of employment income is defined as total employment income reported on tax returns for that particular group. Canadians are free to choose to file their tax returns in either English or French. Quebec is the only province with a strong majority of Francophones. Quebec residents filing tax returns in French are almost certainly Francophones. It might be the case, however, that some Quebec Francophones may file tax returns in English. However, our conclusions on the differential trends for Quebec Francophones and the rest of Canada remain valid as long as the share of top earner Francophones who file tax returns in French does not decline over time. (See Table 6D.4.)

Data on stock options exercised for the period 1995–2000 have been provided by the Statistics Division of Canada Customs and Revenue Agency. The Agency provided us with two set of statistics.

First, wage earners were ranked by full employment income including stock options. The number of individuals, the amount of employment income they reported, as well as the amount of stock option they exercised was calculated for a range of full employment income brackets. From these statistics, we estimated, using the methods described above, the share of stock options in employment income for each of the top groups. Those statistics are reported in Panel A of Table 6D.5 (note that the share of employment income accruing to each of these groups has already been estimated and reported in Table 6D.2).

Second, wage earners were ranked by employment income excluding stock options. The number of individuals, the amount of employment income they

<sup>42</sup> Shares and levels are blown up by around 5% for groups P90–95 and P95–99, by around 10% for groups P99–99.5 and P99.5–99.9, and by around 20% for groups P99.9–99.99 and P99.99–100.

<sup>43</sup> Published tables in *Taxation Statistics* do not allow the estimation of these series for years when the LAD microfiles are not available.

**Table 6D.3 Average wage income and threshold for each fractile (in 2000 Canadian dollars) in Canada, 1972–2000**

Year	P90–100	P95–100	P99–100	P99.5–100	P99.9–100	P99.99–100	P90–95	P95–99	P99–99.5	P99.5–99.9	P99.9–99.99	P90	P95	P99	P99.5	P99.9	P99.99
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
<b>Panel A: Individuals</b>																	
1972	74,176	91,592	152,435	191,436	303,889	528,735	56,758	76,379	113,428	163,307	278,701	51,874	62,946	101,161	133,067	214,059	437,850
1973	76,281	94,602	161,842	205,975	345,806	654,217	57,961	77,792	117,699	171,003	311,103	52,940	64,541	104,693	138,521	230,334	516,617
1974	76,672	94,396	160,915	204,376	358,854	729,138	58,954	77,768	117,514	165,731	317,373	53,921	64,965	105,230	137,210	229,652	550,330
1975	78,574	96,477	167,729	215,365	407,596	917,144	60,669	78,666	120,177	167,272	351,050	55,050	65,334	108,021	139,696	243,226	647,177
1976	80,619	98,551	159,565	207,809	348,605	706,510	62,689	83,301	111,353	172,512	309,004	57,974	68,783	109,466	137,948	222,599	535,335
1977	80,757	97,699	155,807	201,203	341,321	715,802	63,824	83,172	110,516	166,171	299,232	58,572	70,512	107,085	131,525	217,644	534,030
1978	77,520	92,609	142,210	183,368	314,320	669,860	62,436	80,212	101,088	150,599	274,651	57,372	68,577	98,633	123,275	197,969	483,615
1979	77,903	93,237	150,822	192,623	324,693	675,700	62,576	78,837	109,056	159,593	285,627	57,366	68,236	97,408	127,710	209,745	497,139
1980	79,142	95,616	156,757	198,121	348,019	768,976	62,672	80,338	115,401	160,697	301,085	57,487	69,177	104,232	133,374	215,907	546,180
1981	77,274	92,308	144,288	181,003	315,995	693,354	62,444	79,322	107,592	147,198	274,089	57,167	68,540	100,434	120,704	197,776	486,721
1982	78,017	94,494	158,269	207,072	426,459	1,165,309	61,540	78,555	109,461	152,210	344,313	56,437	67,681	100,687	121,961	227,231	703,728
1983	77,481	93,450	156,117	204,382	419,860	1,186,896	61,509	77,786	107,869	150,525	334,548	56,563	67,404	99,036	120,412	225,013	672,182
1984	78,392	94,841	160,952	212,674	446,616	1,313,681	61,940	78,314	109,217	154,176	350,345	57,111	67,798	100,184	122,610	231,121	745,186
1985	79,365	96,448	166,752	223,021	480,757	1,446,320	62,282	78,873	110,487	158,583	373,550	57,321	68,265	100,926	124,586	240,070	834,990
1986	79,553	96,808	167,465	222,984	473,927	1,423,370	62,303	79,140	111,944	160,288	368,343	57,425	68,284	101,769	126,768	242,726	768,191
1987	80,742	99,047	177,191	240,480	528,405	1,581,208	64,047	83,174	124,075	198,944	411,561	57,488	68,550	103,185	129,889	265,343	881,177
1988	85,561	107,639	209,351	297,675	727,984	2,526,101	63,483	82,208	121,004	190,117	528,183	58,247	70,091	108,699	141,153	314,450	1,260,222
1989	87,816	111,586	225,231	326,405	836,300	3,267,809	64,047	83,174	124,075	198,944	566,097	58,793	70,615	111,099	146,353	334,945	1,404,351
1990	85,489	106,992	203,931	286,327	682,712	2,416,870	63,989	82,753	121,558	187,241	489,947	58,480	70,428	109,342	141,919	300,906	1,167,181
1991	83,809	104,470	195,160	271,400	631,891	2,147,467	63,151	81,794	118,892	181,280	463,632	58,045	69,965	107,479	138,763	287,629	1,037,253
1992	85,055	105,731	197,387	275,276	646,407	2,266,611	64,377	82,812	119,539	182,463	466,393	59,092	71,028	108,223	140,358	287,814	1,090,105
1993	85,852	107,404	206,122	292,430	713,087	2,504,019	64,303	82,719	119,847	187,253	514,107	58,906	70,938	108,147	141,307	310,116	1,225,954
1994	87,478	109,832	211,662	299,131	711,517	2,326,451	65,126	84,371	124,214	196,030	532,074	59,633	71,901	111,112	146,848	324,963	1,221,657
1995	88,774	112,444	223,415	316,574	755,220	2,462,685	65,104	84,704	130,255	206,866	565,625	59,473	72,029	114,458	152,136	345,237	1,311,880
1996	90,496	115,783	237,178	340,323	818,861	2,477,941	65,212	85,433	134,039	220,685	634,507	59,483	72,255	117,457	157,049	383,280	1,393,046
1997	94,758	123,552	266,302	392,405	987,746	3,236,470	65,962	87,866	140,189	243,567	737,868	60,089	73,387	123,931	168,319	436,280	1,715,679
1998	98,945	130,279	286,515	424,418	1,082,738	3,590,101	67,607	91,218	148,659	259,790	804,247	61,433	75,430	130,746	179,725	462,914	1,882,364
1999	100,864	133,432	295,520	438,057	1,116,347	3,764,928	68,294	92,913	152,976	268,471	822,131	62,124	76,422	134,367	186,407	474,949	2,071,545
2000	106,300	143,214	333,382	505,704	1,364,367	4,773,356	69,385	95,677	161,000	291,071	985,623	63,102	77,836	138,825	197,300	537,560	2,512,359

Panel B: Families																	
1982	101,672	121,763	194,309	250,309	511,079	1,349,561	81,581	103,627	138,310	185,116	417,915	74,526	89,830	129,074	151,821	273,478	846,293
1983	101,255	121,163	192,781	248,161	506,639	1,415,197	81,347	103,258	137,401	183,542	405,688	74,435	89,440	128,252	150,448	270,782	816,125
1984	103,166	124,019	201,423	263,091	561,297	1,652,549	82,312	104,668	139,755	188,540	440,047	75,186	90,596	130,231	153,572	285,697	915,816
1985	104,710	126,476	208,625	276,533	592,585	1,781,916	82,943	105,939	140,716	197,520	460,437	76,085	91,851	132,476	158,725	296,556	992,748
1986	105,736	127,841	209,679	275,335	569,604	1,643,210	83,631	107,382	144,022	201,769	450,314	76,271	92,548	135,127	164,394	300,509	939,486
1987	108,912	132,844	226,832	305,163	666,990	2,007,646	84,979	109,347	148,502	214,706	518,029	77,375	94,098	138,089	171,512	331,688	1,119,115
1988	115,606	143,741	267,153	370,777	892,020	2,854,513	87,471	112,889	163,530	240,466	673,965	79,704	96,964	148,122	184,410	399,648	1,563,466
1989	120,026	150,726	290,581	412,451	1,045,693	3,937,357	89,326	115,762	168,711	254,140	724,397	81,303	99,157	153,470	189,299	431,098	1,783,381
1990	117,668	145,697	263,420	364,268	855,408	3,010,609	89,640	116,266	162,572	241,483	615,941	81,377	99,669	151,938	184,294	384,250	1,460,320
1991	115,876	143,067	253,166	347,359	796,625	2,757,097	88,686	115,541	158,974	235,042	578,795	80,498	98,743	149,486	182,022	366,742	1,326,439
1992	117,979	145,318	253,709	346,453	784,457	2,599,814	90,641	118,220	160,965	236,952	582,751	82,194	101,141	152,066	186,483	367,555	1,314,715
1993	120,065	149,183	270,201	377,743	892,534	3,081,161	90,948	118,928	162,660	249,045	649,354	82,380	101,535	153,312	191,940	402,448	1,537,901
1994	122,019	151,817	276,086	383,744	880,033	2,748,987	92,221	120,750	168,428	259,672	672,371	83,446	102,866	156,909	199,646	420,980	1,463,066
1995	123,535	154,694	287,821	403,626	930,949	2,915,317	92,377	121,411	172,016	271,796	710,463	83,517	103,158	158,597	206,114	444,955	1,584,672
1996	125,466	158,421	305,788	428,399	989,484	2,847,768	92,512	121,579	183,176	288,127	783,008	83,638	103,420	160,787	214,211	482,484	1,657,332
1997	131,161	168,399	343,931	493,801	1,199,195	3,746,988	93,922	124,517	194,060	317,452	916,107	84,916	105,403	169,861	227,671	552,238	2,081,551
1998	137,032	177,878	371,382	537,101	1,334,955	4,236,519	96,185	129,502	205,662	337,637	1,012,559	86,863	108,431	180,598	240,394	595,741	2,279,223
1999	140,577	183,137	385,853	559,047	1,386,464	4,440,136	98,018	132,458	212,660	352,192	1,047,167	88,274	110,355	187,208	247,866	621,701	2,391,342
2000	148,136	195,663	431,773	642,584	1,648,036	5,359,561	100,609	136,635	220,962	391,221	1,235,644	90,315	112,950	197,153	266,105	709,700	2,917,182

Notes: Levels computed from tax return statistics and total number of tax units and total employment income from Table D. For example, in 2000, the threshold P90 of the top decile of the wage and salaries distribution was \$63,102 for individuals.

**Table 6D.4** Top wage income shares, Francophones in Quebec vs. all filers from rest of Canada, 1982–2000

	# Wage Earnings (1)	Average wage income (\$ 2000) (2)	P90–100 (3)	P95–100 (4)	P99–100 (5)	P99.5–100 (6)	P99.9–100 (7)	P99.99–100 (8)	P90–95 (9)	P95–99 (10)	P99–99.5 (11)	P99.5–99.9 (12)	P99.9–99.99 (13)
<b>Panel A: Francophones in Quebec</b>													
1982	2,355	26,613	26.08	15.24	4.33	2.56	0.82	0.19	10.85	10.91	1.77	1.74	0.63
1983	2,347	25,937	25.95	15.11	4.34	2.58	0.83	0.17	10.85	10.77	1.76	1.75	0.66
1984	2,412	26,465	25.99	15.08	4.33	2.58	0.83	0.17	10.92	10.75	1.75	1.75	0.66
1985	2,456	26,566	25.97	15.10	4.36	2.60	0.84	0.17	10.87	10.75	1.76	1.76	0.67
1986	2,586	26,256	26.24	15.31	4.51	2.74	0.94	0.21	10.93	10.80	1.77	1.80	0.73
1987	2,675	26,585	26.40	15.44	4.62	2.84	1.01	0.24	10.96	10.82	1.78	1.83	0.77
1988	2,729	26,895	26.37	15.51	4.66	2.86	1.02	0.25	10.86	10.84	1.80	1.85	0.77
1989	2,766	26,904	26.42	15.57	4.72	2.91	1.03	0.25	10.85	10.85	1.81	1.88	0.78
1990	2,827	26,888	26.65	15.68	4.71	2.89	0.99	0.22	10.97	10.97	1.83	1.89	0.77
1991	2,797	26,285	27.11	15.94	4.80	2.95	1.03	0.24	11.17	11.15	1.85	1.92	0.79
1992	2,781	26,685	27.19	15.98	4.88	3.04	1.13	0.33	11.21	11.11	1.84	1.91	0.81
1993	2,788	26,519	27.37	16.12	4.97	3.13	1.19	0.36	11.25	11.15	1.84	1.94	0.83
1994	2,831	26,755	27.40	16.14	4.98	3.13	1.16	0.31	11.27	11.16	1.85	1.97	0.85
1995	2,869	26,691	27.66	16.54	5.37	3.50	1.47	0.54	11.12	11.17	1.87	2.04	0.93
1996	2,889	26,494	27.80	16.62	5.31	3.41	1.32	0.36	11.19	11.31	1.90	2.09	0.97
1997	2,952	26,419	28.15	16.99	5.62	3.67	1.46	0.39	11.16	11.37	1.95	2.21	1.08
1998	3,014	26,973	28.89	17.71	6.20	4.18	1.84	0.63	11.19	11.51	2.02	2.34	1.21
1999	3,082	27,327	28.65	17.59	6.14	4.10	1.74	0.50	11.06	11.46	2.03	2.36	1.24
2000	3,184	27,878	29.23	18.01	6.51	4.44	1.98	0.67	11.22	11.50	2.08	2.45	1.31

## Panel B: Canada excluding Quebec

1982	8,509	28,915	27.55	16.79	5.76	3.82	1.61	0.44	10.77	11.03	1.94	2.20	1.17
1983	8,468	28,669	27.74	16.83	5.75	3.82	1.62	0.46	10.91	11.07	1.94	2.20	1.16
1984	8,617	28,843	27.89	16.98	5.91	3.96	1.72	0.50	10.91	11.07	1.95	2.23	1.22
1985	8,755	28,983	28.12	17.19	6.10	4.13	1.83	0.54	10.93	11.09	1.97	2.30	1.29
1986	9,099	28,896	28.28	17.30	6.11	4.10	1.78	0.55	10.98	11.19	2.01	2.33	1.23
1987	9,233	29,027	28.64	17.71	6.51	4.47	2.02	0.61	10.93	11.21	2.04	2.46	1.41
1988	9,498	30,123	29.56	18.80	7.60	5.48	2.77	0.97	10.76	11.20	2.12	2.72	1.80
1989	9,785	30,591	29.99	19.27	8.08	5.93	3.12	1.20	10.71	11.19	2.15	2.82	1.92
1990	9,824	30,135	29.47	18.64	7.37	5.24	2.58	0.92	10.83	11.27	2.12	2.66	1.66
1991	9,703	29,361	29.57	18.60	7.18	5.06	2.44	0.84	10.97	11.42	2.12	2.63	1.60
1992	9,684	29,780	29.54	18.50	7.11	5.00	2.40	0.83	11.04	11.40	2.10	2.60	1.57
1993	9,711	29,733	29.96	18.91	7.52	5.39	2.69	0.94	11.05	11.39	2.12	2.70	1.75
1994	9,789	30,163	30.14	19.09	7.60	5.43	2.63	0.85	11.05	11.49	2.18	2.80	1.78
1995	9,929	30,198	30.54	19.49	7.91	5.66	2.71	0.84	11.05	11.59	2.24	2.95	1.87
1996	10,016	30,307	31.20	20.17	8.50	6.21	3.02	0.93	11.03	11.67	2.30	3.19	2.09
1997	10,271	30,901	32.11	21.13	9.31	6.92	3.47	1.07	10.98	11.82	2.40	3.44	2.41
1998	10,438	31,821	32.61	21.70	9.77	7.29	3.73	1.19	10.91	11.93	2.48	3.56	2.54
1999	10,749	32,222	32.89	21.98	9.97	7.44	3.81	1.23	10.91	12.00	2.54	3.62	2.59
2000	11,080	32,970	34.02	23.21	11.10	8.48	4.57	1.54	10.82	12.11	2.62	3.90	3.03

Notes: Francophones in Quebec defined as Quebec residents filing tax return in French Canada excluding Quebec defined as residents from canadian provinces excluding Quebec. All details in Appendix Section D.

**Table 6D.5** The role of stock options in top wage income shares in Canada, 1995–2000

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
	P0–100	P90–100	P95–100	P99–100	P99.5–100	P99.9–100	P99.99–100	P90–95	P95–99	P99–99.5	P99.5–99.9	P99.9–99.99	P99.99–100
<b>Panel A: Fraction of stock options in total wage income and top wage income groups (ranked including stock options) (in percent)</b>													
1995	0.261	0.89	1.39	3.33	4.45	7.23	10.82	0.03	0.13	0.58	1.92	5.47	10.82
1996	0.429	1.43	2.19	5.06	6.64	10.25	16.43	0.08	0.21	0.96	3.22	7.33	16.43
1997	0.648	2.06	3.10	6.72	8.55	12.33	16.00	0.09	0.30	1.39	4.35	10.03	16.00
1998	0.669	2.09	3.14	6.77	8.67	13.03	19.04	0.07	0.30	1.31	4.04	9.92	19.04
1999	0.880	2.68	4.01	8.61	11.05	16.82	25.69	0.08	0.36	1.59	5.05	12.21	25.69
2000	1.538	4.44	6.55	13.56	17.16	25.58	38.79	0.10	0.49	2.34	7.58	18.30	38.79
<b>Panel B: Top wage income shares excluding stock options (both in ranking and in wage income) (in percent)</b>													
1995	29.97	18.89	17.37	7.37	5.17	2.42	0.78	11.08	11.52	2.20	2.75	1.64	0.78
1996	30.46	19.34	7.72	5.46	2.56	0.75	0.75	11.11	11.62	2.26	2.90	1.81	0.75
1997	31.26	20.18	8.41	6.10	2.99	0.97	1.08	11.08	11.77	2.31	3.11	2.02	0.97
1998	31.72	20.67	8.78	6.40	3.16	1.03	1.03	11.05	11.89	2.39	3.23	2.14	1.03
1999	31.78	20.75	8.79	6.38	3.14	1.00	1.00	11.03	11.96	2.41	3.23	2.14	1.00
2000	32.49	21.44	9.33	6.85	3.50	1.13	1.13	11.05	12.11	2.48	3.35	2.37	1.13
<b>Panel C: Top wage income shares excluding stock options in ranking but including stock options in wage income (in percent)</b>													
1995	30.12	19.06	7.52	5.30	2.48	0.79	1.06	11.06	11.53	2.22	2.82	1.69	0.79
1996	30.65	19.57	7.94	5.64	2.64	0.76	1.08	11.08	11.63	2.30	3.00	1.88	0.76
1997	31.61	20.58	8.79	6.43	3.14	1.00	1.03	11.03	11.79	2.36	3.29	2.14	1.00
1998	32.08	21.08	9.17	6.72	3.30	1.05	1.00	11.00	11.91	2.44	3.42	2.25	1.05
1999	32.23	21.26	9.25	6.76	3.29	1.03	1.03	10.97	12.01	2.49	3.46	2.26	1.03
2000	33.17	22.22	10.06	7.48	3.84	1.20	1.20	10.95	12.16	2.57	3.65	2.64	1.20
<b>Panel D: Fraction of stock options in top wage income groups ranked excluding stock options (in percent)</b>													
1995	0.74	1.13	2.29	2.76	2.79	1.53	0.09	0.38	1.14	2.73	3.38	3.38	1.53
1996	1.08	1.61	3.22	3.59	3.36	1.94	0.13	0.52	2.31	3.79	3.99	3.99	1.94
1997	1.77	2.61	5.01	5.80	5.46	3.95	0.18	0.79	2.75	6.16	6.38	6.38	3.95
1998	1.79	2.61	4.85	5.53	4.81	3.11	0.21	0.89	2.99	6.24	5.63	5.63	3.11
1999	2.28	3.27	5.83	6.46	5.43	3.40	0.35	1.30	4.10	7.45	6.38	6.38	3.40
2000	3.31	4.74	8.46	9.66	10.02	7.01	0.42	1.68	5.00	9.28	11.43	11.43	7.01

Notes: Stock options are reported as wage income on tax returns when exercised. In Panel A, wage earners are ranked by wage income including stock option exercises (as in Table D2), and fraction of stock options (in total wage income) are reported in percent. In Panel B, wage earners are ranked by wage income excluding stock options and wage income shares are computed excluding stock options (in both numerator and denominator). In Panel C, wage earners are ranked by wage income including stock options but wage income shares are computed including stock options (in both numerator and denominator). In Panel D, wage earners are ranked by wage income excluding stock options and the share of stock options (in percent) in total wage income (including stock options) are reported. All details in Appendix Section D.



reported, as well as the amount of stock options they exercised was calculated for a range of employment income (excluding stock options) brackets. From these statistics, we estimated the shares of employment income (excluding stock options) accruing to each of the top wage groups (ranked by employment income excluding stock options). These statistics are reported on Panel B of Table 6D.5. Keeping the ranking by employment income excluding stock options, we estimated the share of employment income (including stock options) accruing to each of these top groups (ranked by employment income excluding stock options) by adding back the amount of stock options reported both in the numerator for each group and the denominator. Those top wage shares are reported in Panel C of Table 6D.5. Finally, for each of these groups, we estimated the fraction of stock options they reported (computed as the amount of stock options divided by the amount of employment income including stock options). Those statistics are reported in Panel D of Table 6D.5.

#### APPENDIX 6E: INCOME MOBILITY SERIES

We have used the longitudinal structure of the micro-data available for the period 1982–2000 to analyze mobility of high incomes.

First, we have estimated top income shares based on three and five consecutive years of income instead of just one year of income as we did previously. To compute such top income shares, we have ranked individuals according to the sum of real market incomes over the corresponding years (missing individuals in one or more years are counted as zero income). The total number of adults is taken as the average over the corresponding years (from Table 6A.1). The total income for the denominator is taken as the sum of total real incomes (from Table 6A.1). Table 6E.1, Panel A reports those top income shares results.

Second, we have computed direct measures of mobility for high income groups. We report in Panel B of Table 6E.1, the probability of an individual in a top income group in year  $t$  remaining in this top income group one, two, and three years later. This probability is estimated unconditional of whether the individual files an income tax return in the later year. Complete matrices of mobility across those top income groups are available from the authors upon request.

#### APPENDIX 6F: ESTIMATING MARGINAL TAX RATES AND AVERAGE TAX RATES, 1920–2000

The Canadian income tax structure has gone through many reforms over the course of the century. Perry (1955, 1989) provides a comprehensive description of the development and evolution of taxation in Canada during the pre-war and post-war periods respectively.



Panel B: Probability of staying in top group in next years

	One year			Two years			Three years										
	P90-100	P95-100	P99-100	P90-100	P95-100	P99-100	P90-100	P95-100	P99-100								
	P99.5-100	P99.9-100	P99.9-100	P99.5-100	P99.9-100	P99.9-100	P99.5-100	P99.9-100	P99.9-100								
1982	78.93%	74.60%	66.94%	63.90%	56.07%	1982	73.63%	68.67%	61.07%	58.03%	49.71%	1982	69.57%	63.64%	55.13%	51.68%	41.91%
1983	80.78%	76.75%	70.09%	67.12%	59.63%	1983	75.30%	70.10%	61.72%	58.00%	49.15%	1983	71.24%	65.69%	57.07%	53.75%	45.47%
1984	80.70%	76.08%	68.90%	65.68%	55.97%	1984	75.29%	70.08%	62.16%	58.96%	49.86%	1984	70.65%	64.62%	55.52%	51.63%	42.22%
1985	80.17%	75.41%	67.08%	63.84%	53.62%	1985	74.30%	68.43%	58.77%	54.91%	45.70%	1985	70.43%	64.50%	54.89%	51.23%	41.75%
1986	79.73%	74.62%	65.72%	62.00%	52.08%	1986	74.03%	68.78%	60.05%	55.82%	45.10%	1986	70.62%	65.10%	56.95%	52.98%	42.42%
1987	78.90%	73.67%	64.40%	60.08%	49.93%	1987	73.77%	68.40%	59.81%	55.87%	45.19%	1987	69.66%	64.10%	55.40%	51.33%	41.63%
1988	79.57%	75.09%	68.45%	65.64%	58.24%	1988	73.50%	68.63%	61.22%	58.30%	49.68%	1988	69.42%	64.17%	56.32%	53.55%	44.10%
1989	79.59%	75.41%	70.12%	68.03%	59.97%	1989	73.55%	68.86%	62.89%	60.49%	51.21%	1989	68.98%	63.88%	57.54%	55.13%	45.49%
1990	80.01%	76.29%	70.68%	68.87%	61.55%	1990	73.95%	69.57%	63.32%	60.88%	51.56%	1990	70.03%	64.73%	57.21%	54.62%	44.19%
1991	80.54%	76.60%	70.70%	68.79%	61.08%	1991	75.22%	70.21%	62.76%	60.74%	50.86%	1991	70.95%	65.13%	57.29%	55.35%	46.31%
1992	82.08%	77.83%	70.99%	69.19%	61.00%	1992	76.31%	71.02%	63.88%	61.83%	52.98%	1992	72.45%	66.06%	58.71%	56.54%	47.51%
1993	82.08%	77.17%	70.29%	69.13%	61.99%	1993	76.66%	70.23%	63.19%	61.89%	52.64%	1993	72.53%	65.53%	58.37%	56.20%	47.36%
1994	81.85%	76.54%	70.15%	68.84%	61.66%	1994	76.37%	70.13%	63.36%	61.28%	53.49%	1994	71.95%	64.80%	58.10%	55.51%	46.98%
1995	81.55%	76.17%	69.29%	67.89%	59.11%	1995	75.73%	69.27%	62.66%	60.97%	51.05%	1995	71.26%	64.70%	58.06%	56.02%	47.55%
1996	80.85%	75.17%	69.78%	68.29%	59.40%	1996	75.11%	68.92%	63.15%	61.30%	51.67%	1996	70.68%	64.31%	58.23%	55.71%	45.10%
1997	80.64%	75.63%	70.01%	68.23%	60.30%	1997	75.01%	69.73%	63.26%	60.67%	51.19%	1997	69.75%	64.17%	58.06%	55.28%	45.73%
1998	80.82%	76.24%	70.56%	68.17%	59.10%	1998	74.13%	69.01%	63.15%	60.25%	48.99%						
1999	79.55%	75.07%	69.37%	66.38%	56.60%												

Note: Panel A displays top income shares estimated using income averaged over 1, 3, and 5 years. The one year average is identical to Table B1 estimates. In the case of multiple year estimates, individuals are ranked according to the sum of real market incomes over the corresponding years (missing individuals in one or more years are counted as zero income). The total number of adults is taken as the average over the corresponding years (from Table 6A.1). The total income for the denominator is taken as the sum of total real incomes (from Table 6A.1). Panel B reports the probability of individuals in a top group in a given year remaining in that top group in the next year, after two years, and after three years. All details are in Appendix Section E.

Marginal tax rates reported in Table 6F.1 have been computed as follows. We consider each of the raw income thresholds P90, P95, etc. estimated from the interpolation methods described in Appendix 6B. We then assume that the taxpayer at each of these income thresholds is a married taxpayer (who can claim the married exemption level) with two dependents (for example, a married couple with two children under 18). We therefore subtract from raw income the married exemption and two dependent exemptions. We also subtract the average level of deductions claimed on top of marital and personal exemptions at the corresponding percentiles to obtain net taxable income.<sup>44</sup> Tax liability is then obtained from taxable income from a standard tax schedule with increasing marginal tax rates by income brackets, from which the marginal tax rate for any taxable income level can be easily obtained. The marginal tax rate we report includes all surtaxes, as well as the provincial tax rate (see below).

For some years, surtaxes apply only to some forms of income such as investment income. Similarly, dividends from Canadian corporations often face a lower marginal tax rate. In those cases, we have assumed that the marginal dollar earned by the taxpayer has the same composition as total income for the average taxpayer in that percentile.<sup>45</sup> For the period 1949–71, we have taken into account the dividend credit to reduce the marginal tax rate according to the share of dividend income accruing at each percentile. Starting in 1972, in addition to the dividend tax credit, dividends were grossed-up before being included in income. As a result, for high income earners in a high tax bracket, the net marginal tax on received dividends was very close to the marginal tax on ordinary income and therefore we assume that dividends are taxed as normal income when computing our marginal tax rates.

Before 1942, some provinces and municipalities levied personal income taxes. The two biggest provinces, Ontario and Quebec, did not introduce provincial income taxes before 1935 and 1941 respectively.<sup>46</sup> Therefore, we do not try to add these provincial taxes in our computations of marginal tax rates and tax liability in the pre-war period. During the Second World War, the provinces agreed to stop raising income taxes and let the federal government collect all income taxes. After the Second World War and up to 1961, all provinces (except Quebec) worked on a tax rental agreement whereby the federal government would collect all income taxes and redistribute part of income tax collections to each province. Therefore before 1962, the federal income tax liability includes both federal and provincial income taxes. Starting in 1962 and up to 1971, tax collection

<sup>44</sup> For years 1920–28, no additional deductions were allowed. For 1929–45, we have assumed that deductions amounted to 2% of gross income at all percentiles (which is true on average for year 1946, the first year these details are available). From 1946 to 2000, the level of deductions increases slightly over time and we have made approximate computations for each year and percentile threshold using the available tables from *Taxation Statistics*.

<sup>45</sup> For example, if the taxpayer in percentile P99.9 reports on average 30% investment income, and 70% labour income, and the marginal tax rate for investment and labour income are  $t_1$  and  $t_2$  respectively, we estimate the marginal tax rate as  $t = 0.3 * t_1 + 0.7 * t_2$ .

<sup>46</sup> Some large cities in these provinces had modest income taxes since the beginning of the century or even before.

Table 6F.1 Marginal income tax rates in Canada, 1920–2000

	P90 (1)	P95 (2)	P98 (3)	P99 (4)	P99.5 (5)	P99.9 (6)	P99.95 (7)	P99.99 (8)	P99.999 (9)	Top (10)
1920	0.0	0.0	4.0	4.0	4.2	15.8	20.0	26.3	44.1	72.5
1921	0.0	0.0	4.0	4.0	4.2	15.8	21.0	25.2	39.9	72.5
1922	0.0	0.0	0.0	4.0	4.2	13.7	16.8	24.2	39.9	72.5
1923	0.0	0.0	0.0	4.0	4.2	13.7	16.8	24.2	39.9	72.5
1924	0.0	0.0	0.0	4.0	3.2	13.7	16.8	24.2	39.9	72.5
1925	0.0	0.0	0.0	0.0	2.0	8.0	14.0	23.0	38.0	50.0
1926	0.0	0.0	0.0	0.0	1.8	9.0	14.4	21.6	36.9	45.0
1927	0.0	0.0	0.0	0.0	1.6	8.8	13.6	20.0	32.0	40.0
1928	0.0	0.0	0.0	1.6	2.4	9.6	15.2	20.8	33.6	40.0
1929	0.0	0.0	0.0	1.6	2.4	9.6	15.2	20.8	33.6	40.0
1930	0.0	0.0	0.0	0.0	1.6	8.8	14.4	20.8	33.6	40.0
1931	0.0	0.0	0.0	2.0	3.2	9.5	15.8	25.2	39.9	52.5
1932	0.0	0.0	0.0	3.0	4.0	10.5	15.8	26.3	41.0	58.8
1933	0.0	0.0	0.0	3.0	4.0	9.5	14.7	25.2	36.8	58.8
1934	0.0	0.0	0.0	3.0	4.0	13.5	19.8	31.3	47.9	69.3
1935	0.0	0.0	0.0	3.0	4.0	13.5	19.8	31.3	47.9	69.3
1936	0.0	0.0	0.0	3.0	4.0	14.6	20.8	32.3	50.0	69.3
1937	0.0	0.0	0.0	3.0	5.0	14.6	21.9	33.4	47.9	69.3
1938	0.0	0.0	0.0	3.0	5.0	16.7	22.9	32.3	51.1	69.3
1939	0.0	0.0	0.0	3.6	6.0	18.7	27.5	38.8	60.0	83.2
1940	0.0	3.0	8.0	15.0	19.0	40.5	43.5	53.5	68.5	89.5
1941	3.5	5.0	21.0	26.5	37.0	54.0	57.0	65.0	75.0	93.0
1942	18.0	18.0	20.0	22.0	29.0	43.1	43.4	50.0	59.4	59.4
1943	40.0	40.0	44.0	48.0	58.0	69.0	69.5	80.0	95.0	95.0
1944	40.0	40.0	44.0	48.0	58.0	69.0	69.5	80.0	95.0	95.0
1945	38.4	38.4	42.2	46.1	55.7	66.2	66.7	76.8	91.2	91.2
1946	33.6	33.6	37.0	40.3	48.7	58.0	62.6	67.2	79.8	79.8
1947	22.5	24.0	24.0	25.5	35.0	49.5	55.0	60.0	75.5	85.5
1948	20.0	20.0	20.0	22.0	31.0	52.0	57.5	62.5	73.0	83.0
1949	15.0	17.0	19.0	22.0	26.0	45.0	50.0	55.0	65.0	80.0
1950	15.0	17.0	19.0	22.0	26.0	45.0	50.0	55.0	70.0	80.0
1951	16.5	18.7	20.9	24.2	33.0	49.5	55.0	60.5	77.0	88.0
1952	19.7	22.4	22.4	25.7	35.5	52.0	57.5	68.5	79.5	91.0
1953	18.0	20.5	23.5	26.5	31.0	45.5	50.0	61.0	72.0	80.0
1954	17.0	19.0	21.5	25.0	28.5	43.0	47.5	57.5	67.0	77.0
1955	16.0	18.0	21.0	24.0	32.5	42.0	46.5	56.5	66.0	76.0
1956	15.0	17.0	20.0	23.0	31.5	46.0	45.5	55.5	65.0	75.0
1957	17.0	17.0	20.0	23.0	31.5	46.0	45.5	55.5	65.0	75.0
1958	17.0	17.0	20.0	27.0	31.5	46.0	45.5	55.5	65.0	75.0
1959	18.0	18.0	25.0	26.0	32.5	47.0	46.5	56.5	66.0	76.0
1960	19.0	19.0	22.0	29.0	33.5	48.0	46.5	57.5	67.0	77.0
1961	19.0	19.0	26.0	29.0	38.5	48.0	47.0	56.0	65.0	75.0
1962	17.0	22.0	26.0	29.0	38.5	48.0	47.0	56.0	65.0	75.0
1963	17.0	22.0	26.0	29.0	38.5	48.0	52.0	56.0	65.0	75.0
1964	19.0	22.0	26.0	34.0	43.5	48.0	52.0	56.0	65.0	75.0
1965	19.0	22.0	30.0	34.0	43.5	48.0	52.0	56.0	65.0	75.0
1966	22.0	22.0	30.0	39.0	43.5	48.0	52.0	56.0	65.0	75.0
1967	22.0	26.0	35.0	39.0	43.5	48.0	52.0	61.0	65.0	75.0
1968	22.0	26.0	35.0	44.0	44.0	53.0	53.0	61.0	65.0	75.0

*(contd.)*

Table 6F.1 (Contd.)

	P90 (1)	P95 (2)	P98 (3)	P99 (4)	P99.5 (5)	P99.9 (6)	P99.95 (7)	P99.99 (8)	P99.999 (9)	Top (10)
1969	22.7	30.9	41.2	45.3	45.3	54.6	59.7	62.8	72.1	77.3
1970	26.8	30.9	41.2	45.3	45.3	54.6	59.7	62.8	72.1	77.3
1971	26.4	30.5	40.6	44.7	49.7	53.8	58.9	61.9	66.0	76.1
1972	31.4	33.9	44.0	44.0	49.0	54.0	59.1	59.1	59.1	59.1
1973	32.6	38.9	43.9	43.9	48.9	61.3	61.3	61.3	61.3	61.3
1974	35.2	38.9	43.9	48.9	50.9	61.3	61.3	61.3	61.3	61.3
1975	35.2	38.0	42.9	50.9	50.9	61.3	61.3	61.3	61.3	61.3
1976	33.1	38.0	45.7	50.9	50.9	61.3	61.3	61.3	61.3	61.3
1977	33.8	37.8	46.1	51.8	51.8	56.2	61.9	61.9	61.9	61.9
1978	33.8	37.8	46.1	51.8	51.8	56.2	61.9	61.9	61.9	61.9
1979	33.8	37.8	46.1	51.8	51.8	56.2	61.9	61.9	61.9	61.9
1980	33.8	46.1	46.1	51.8	51.8	56.2	61.9	61.9	61.9	61.9
1981	38.4	46.7	46.7	52.6	52.6	56.9	62.8	62.8	62.8	62.8
1982	37.0	37.0	44.4	50.3	50.3	50.3	50.3	50.3	50.3	50.3
1983	37.0	37.0	44.4	50.3	50.3	50.3	50.3	50.3	50.3	50.3
1984	37.0	37.0	44.4	50.3	50.3	50.3	50.3	50.3	50.3	50.3
1985	37.0	37.6	45.2	52.0	52.0	52.0	52.0	52.0	52.0	52.0
1986	37.5	38.8	47.0	54.9	54.9	54.9	54.9	54.9	54.9	54.9
1987	38.3	45.9	46.4	52.5	52.5	52.5	52.5	52.5	52.5	52.5
1988	40.0	40.0	44.7	44.7	46.1	46.1	46.1	46.1	46.1	46.1
1989	40.6	40.6	45.2	47.2	47.2	47.2	47.2	47.2	47.2	47.2
1990	41.1	41.1	45.8	48.2	48.2	48.2	48.2	48.2	48.2	48.2
1991	41.1	41.1	47.3	48.8	48.8	48.8	48.8	48.8	48.8	48.8
1992	41.3	41.3	47.6	49.1	49.1	49.1	49.1	49.1	49.1	49.1
1993	41.9	41.9	50.1	51.5	51.5	51.5	51.5	51.5	51.5	51.5
1994	41.9	44.4	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5
1995	41.9	44.9	52.3	52.3	52.3	52.3	52.3	52.3	52.3	52.3
1996	41.3	44.3	52.0	52.0	52.0	52.0	52.0	52.0	52.0	52.0
1997	39.3	41.8	49.0	49.0	49.0	49.0	49.0	49.0	49.0	49.0
1998	37.9	40.1	49.4	49.4	49.4	49.4	49.4	49.4	49.4	49.4
1999	36.7	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3	48.3
2000	34.6	46.4	47.9	47.9	47.9	47.9	47.9	47.9	47.9	47.9

Notes: Marginal tax rates are calculated assuming exemptions for a married person with two dependents and average deductions by gross income level. Before 1972, only the federal income tax rates are reported as these included provincial income tax rates in most cases. Beginning in 1972, the reported income rates include then-applicable provincial income tax, assuming residence in the largest province, Ontario. All rates include applicable surtaxes and credits. All details in Appendix Section F.

Source: Computations by authors based on gross income interpolations (reported in Table B4) and tax law for each year.

agreements were passed whereby the federal government granted abatements from federal income taxes and provinces would receive in provincial taxes amounts equal to the abatement from federal income taxes. Therefore for years before 1972, we simply use the federal income tax structure to compute marginal tax rates, as well as tax liabilities reported in *Taxation Statistics*.

Starting in 1972, the nominal federal tax rate was lowered but each province defined a given percentage that the federal tax administration would collect on behalf of the province on top of the nominal federal income tax. In Table 6F.1, we

have used the case of Ontario (the largest province containing more than half of the highest incomes in Canada) to compute marginal tax rates. Over the years, the Ontario provincial tax has changed many times and special provincial surtaxes have been introduced as well that have in part offset the decline in progressivity of the federal tax system. All these surtaxes have been included in the estimation of marginal tax rates reported in Table 6F.1. Marginal tax rates for other provinces have followed a very similar time pattern as rates for Ontario. Quebec in particular has almost always had marginal rates slightly higher than Ontario (by 2 to 4 percentage points in general).

Average tax rates have been computed as the sum of federal and provincial tax liability (after surtaxes and net of all credits) paid by each group divided by total gross income (including only the taxable portion of capital gains for the 1972–2000 period) reported by each group. We have decided to include the taxable portions of capital gains in the income denominator so that our average tax rate measures reflect the average tax on ordinary income. For years 1982–2000, we have used the LAD micro-files to do these computations. In the period 1920–81, we have used the distribution tables, which always report the amount of taxes paid by income brackets. Average tax rates are reported in Table 6F.2 and depicted in Figures 6F.2 and 6F.3 for various top income groups.

We have estimated the (income weighted) marginal tax rate for the top 1% and top 0.1% groups in Canada for the regression analysis of Table 6.2 and the graphical analysis in Figure 6.14 as follows. The top 0.1% marginal tax rate is estimated as:

$$\frac{[Share_{P99.9-99.99} * MTR_{99.95} + Share_{P99.99-100} * (MTR_{99.99} + MTR_{99.999})/2]}{[Share_{P99.9-99.99} + Share_{P99.99-100}]}$$

where  $Share_{P99.9-99.99}$  denotes the income share of group P99.9–99.99 from Table 6B.1 and  $MTR_{99.95}$  denotes the marginal tax rate at percentile 99.95 from Table 6F.1, etc.

Similarly, the top 1% marginal tax rate is estimated as:

$$\frac{(Share_{P99-99.9} * MTR_{99.5} + Share_{P99.9-100} * MTR_{Top\ 0.1\%})}{[Share_{P99-99.9} + Share_{P99.9-100}]}$$

where  $Share_{P99-99.9}$  is the income share of P99–99.5 plus P99.5–99.9 from Table 6B.1 and  $MTR_{Top\ 0.1\%}$  is the marginal tax rate for the top 0.1% group estimated above.

Table 6F.2 Average tax rates in upper groups in Canada, 1920–2000

	P90–100 (1)	P95–100 (2)	P99–100 (3)	P99.5–100 (4)	P99.9–100 (5)	P99.99–100 (6)	P90–95 (7)	P95–99 (8)	P99–99.5 (9)	P99.5–99.9 (10)	P99.9–99.99 (11)
1920	2.90	3.69	7.34	9.77	14.92	20.50	1.00	0.80	0.82	4.39	11.33
1921	2.35	2.95	5.92	8.03	12.76	22.14	0.91	0.68	0.68	3.96	8.87
1922	2.18	2.77	5.32	7.22	11.72	17.11	0.93	0.75	0.71	3.24	9.14
1923	2.26	2.91	5.22	7.05	11.78	18.01	0.92	0.80	0.74	3.03	8.75
1924	2.21	2.81	5.02	6.72	10.91	15.31	0.95	0.82	0.76	2.99	8.71
1925	1.47	2.06	4.36	5.88	10.38	16.22	0.18	0.24	0.47	2.07	7.84
1926	1.77	2.44	4.97	6.60	11.21	16.90	0.17	0.25	0.58	2.50	8.44
1927	1.77	2.43	4.86	6.42	10.97	16.59	0.12	0.20	0.56	2.29	8.10
1928	1.82	2.49	4.93	6.49	11.20	16.93	0.07	0.15	0.64	2.29	8.37
1929	1.74	2.38	4.68	6.15	10.66	16.62	0.05	0.15	0.63	2.23	7.86
1930	1.67	2.30	4.55	5.98	10.37	16.62	0.03	0.12	0.55	1.95	7.37
1931	1.87	2.59	5.39	7.21	12.98	22.57	0.14	0.20	0.65	2.24	8.68
1932	2.40	3.25	6.72	8.85	15.41	26.47	0.43	0.43	1.25	3.03	10.25
1933	2.21	2.99	6.21	8.25	14.42	26.19	0.43	0.45	1.09	3.03	9.56
1934	2.70	3.67	7.65	10.15	18.03	33.45	0.43	0.45	1.24	3.29	11.00
1935	2.75	3.75	7.87	10.44	18.60	35.17	0.42	0.43	1.33	3.44	11.34
1936	2.98	4.06	8.37	10.97	18.89	33.56	0.42	0.47	1.48	3.85	12.05
1937	3.23	4.42	9.16	12.06	21.17	42.51	0.42	0.48	1.50	4.16	12.82
1938	3.11	4.21	8.47	11.03	18.83	32.91	0.38	0.50	1.79	4.53	12.54
1939	3.17	4.30	8.82	11.51	19.48	33.28	0.45	0.55	1.76	4.70	13.64
1940	4.93	6.21	11.76	14.93	23.84	38.07	2.01	1.91	4.23	8.04	16.55
1941	10.74	13.90	25.71	31.10	42.30	54.88	4.07	4.90	12.42	22.02	36.81
1942	11.89	14.55	21.24	24.12	30.31	37.42	6.54	9.55	14.23	19.23	27.25
1943	24.08	29.03	41.74	47.06	58.50	70.81	14.57	20.02	29.28	38.45	53.60
1944	22.31	27.17	39.80	45.14	56.92	68.85	13.08	18.44	27.69	36.58	52.30
1945	19.73	24.35	36.16	41.32	53.04	64.52	10.73	16.11	24.65	33.05	48.81
1946	18.48	22.16	32.65	37.12	47.36	57.39	11.00	14.44	22.62	30.10	43.78
1947	14.92	18.68	27.73	31.89	41.97	54.30	7.18	11.90	18.37	25.02	37.54
1948	13.29	16.58	24.68	28.77	38.63	47.81	6.68	10.61	15.45	21.96	35.69



1949	9.99	13.04	20.89	24.69	33.56	41.68	3.96	7.33	12.42	18.90	31.05
1950	10.77	13.92	21.91	25.88	35.02	43.30	4.50	7.95	12.81	19.68	32.40
1951	12.81	16.18	25.34	29.71	40.19	48.72	6.27	9.58	15.52	22.61	37.62
1952	14.05	17.50	27.04	31.43	41.99	50.46	7.46	10.82	17.46	24.36	39.18
1953	12.90	15.77	23.94	27.68	36.41	41.75	7.51	10.21	15.85	21.85	34.68
1954	12.25	14.96	22.68	26.24	34.33	40.63	7.13	9.63	14.86	20.92	32.23
1955	12.05	14.68	22.22	25.72	33.50	37.57	7.08	9.46	14.54	20.35	32.04
1956	11.97	14.52	22.10	25.71	33.67	41.71	7.24	9.51	14.34	20.39	31.03
1957	12.13	14.67	22.13	25.68	33.29	40.96	7.44	9.83	14.66	20.69	30.79
1958	11.74	14.43	21.96	25.76	33.02	40.49	6.72	9.50	14.06	21.08	30.61
1959	12.28	15.07	22.75	26.77	33.88	41.36	7.13	10.15	14.48	22.26	31.50
1960	12.82	15.68	23.54	27.64	34.56	42.28	7.55	10.68	15.16	23.31	32.12
1961	13.00	15.87	23.38	27.29	33.64	39.95	7.70	11.09	15.50	23.33	31.58
1962	13.05	15.76	22.94	26.62	32.65	39.35	8.10	11.29	15.64	23.02	30.62
1963	13.55	16.33	23.69	27.51	33.82	41.01	8.50	11.83	16.18	23.81	31.72
1964	14.46	17.35	25.14	28.92	35.00	42.12	9.17	12.50	17.63	25.31	32.83
1965	14.40	17.16	24.69	28.34	34.22	40.87	9.37	12.49	17.43	24.85	32.18
1966	14.94	17.64	24.73	28.11	35.03	40.58	10.04	13.37	18.16	24.10	33.38
1967	16.56	19.50	27.27	30.77	36.26	40.72	11.21	14.81	20.51	27.64	35.00
1968	18.24	21.38	29.70	33.52	39.95	44.98	12.56	16.36	22.28	29.85	38.56
1969	19.64	22.89	31.51	34.91	41.97	45.97	13.79	17.72	25.01	30.92	40.87
1970	20.66	23.95	32.61	35.79	42.93	48.04	14.84	18.86	26.60	31.89	41.58
1971	21.40	24.64	32.84	35.58	41.92	46.56	15.73	19.86	27.68	32.24	40.75
1972	23.82	26.37	32.95	35.69	39.91	41.90	19.33	22.47	27.65	33.34	39.33
1973	24.52	27.15	33.80	36.63	41.07	44.33	19.81	23.13	28.31	34.09	40.05
1974	24.64	27.42	33.99	36.83	41.14	44.74	19.70	23.49	28.56	34.33	40.00
1975	24.32	27.04	34.26	37.47	42.64	47.47	19.50	22.74	28.09	34.37	41.03
1976	23.85	26.28	33.51	36.92	42.58	46.70	19.72	22.26	27.23	33.63	41.24
1977	23.61	26.05	32.39	34.89	39.86	42.81	19.55	22.59	27.80	31.98	38.87
1978	22.62	24.70	29.59	31.35	36.05	38.27	19.10	21.98	26.33	28.49	35.27
1979	22.50	24.48	29.05	30.16	33.14	33.74	19.08	21.81	26.88	28.24	32.90
1980	23.15	25.10	29.30	31.05	34.37	35.24	19.70	22.57	25.86	28.84	33.97
1981	24.01	26.14	30.46	32.12	33.90	33.66	20.28	23.57	27.20	30.97	33.99
1982	22.49	24.01	26.73	28.36	30.29	30.52	19.76	22.28	23.26	26.87	30.18

(contd.)

Table 6F.2 (contd.)

	P90-100 (1)	P95-100 (2)	P99-100 (3)	P99.5-100 (4)	P99.9-100 (5)	P99.99-100 (6)	P90-95 (7)	P95-99 (8)	P99-99.5 (9)	P99.5-99.9 (10)	P99.9-99.99 (11)
1983	22.32	23.83	26.80	28.76	31.05	31.48	19.65	21.97	22.77	27.13	30.85
1984	22.82	24.33	26.98	28.62	30.19	29.55	20.13	22.60	23.44	27.38	30.42
1985	23.64	25.21	28.45	29.65	31.30	31.30	20.81	23.07	25.72	28.32	31.30
1986	24.15	25.63	28.59	30.69	33.69	35.53	21.48	23.67	24.17	28.49	32.90
1987	24.63	25.88	28.23	30.12	33.51	35.98	22.35	24.24	24.10	27.54	32.42
1988	24.84	26.04	28.09	29.75	32.30	33.73	22.46	24.37	24.13	27.46	31.51
1989	26.16	27.53	30.12	31.92	34.37	35.48	23.36	25.28	25.59	29.51	33.60
1990	26.85	28.28	30.92	32.69	34.88	35.92	24.01	26.15	26.68	30.71	34.26
1991	26.39	27.78	30.55	32.34	34.44	34.16	23.67	25.63	26.36	30.49	34.52
1992	26.05	27.49	30.51	32.46	35.06	36.32	23.29	25.21	26.01	30.28	34.36
1993	25.92	27.41	30.59	32.75	35.45	36.29	23.06	24.99	25.58	30.41	34.96
1994	26.45	28.05	31.13	33.05	35.78	37.20	23.37	25.69	26.67	30.74	35.04
1995	26.95	28.65	32.17	34.43	36.91	37.51	23.56	25.86	26.90	32.25	36.54
1996	27.20	29.02	32.68	34.75	36.81	36.52	23.46	25.97	27.62	32.82	36.88
1997	27.62	29.58	33.13	34.92	36.69	36.31	23.41	26.34	28.50	33.14	36.82
1998	27.54	29.57	32.88	34.58	36.15	35.31	23.02	26.36	28.37	32.93	36.52
1999	27.29	29.26	32.24	33.78	34.97	33.32	22.81	26.23	28.08	32.44	35.85
2000	27.14	29.00	31.77	33.18	34.00	33.31	22.77	25.92	27.77	32.16	34.32

Notes: Computations by authors based on tax return statistics. See Appendix Section F for details. Average tax rate defined as ratio of total net taxes paid to total gross income reported (including taxable capital gains) for each group. Average tax rates reported include both Provincial and Federal taxes and surtaxes as well as all income tax credits and deductions.

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Author Queries

AQ1: For footnote 4, there is more than one Atkinson paper in the volume. This is clearly the methodological chapter. Either you need the chapter numbers (to distinguish the UK chapter from the methodological chapter or you can try to finesse it with 'Elsewhere in this volume...'. This comes up a lot. I will refer to it as the Atkinson volume problem.

AQ2: Footnote 11 refers to material in Section 5 that I do not think is there. As you can see I just changed it to Figure 3.

AQ3: To be replaced by year 2000 when LAD data becomes available I think this note is an artefact and can be cut.

AQ4: Do we come back to this in Table 7.

AQ5: Footnote 18 has the Atkinson volume problem.

AQ6: Not referenced in text or appendix. Cut?