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## 2 Government Incentives and Household Saving in Canada

John B. Burbidge and James B. Davies

### 2.1 Introduction

This paper examines tax incentives for personal saving in Canada. It pays particular attention to tax-deferred retirement savings plans and focuses on the period since 1970, during which there have been major changes in the Canadian tax system. These changes have been on such a scale that a discernible impact on saving behavior would not be surprising. It is not our task here to measure these effects. Instead, our purpose is to investigate carefully the structure of incentives, and their changes over time, as groundwork for future attempts at such measurement.

The period studied started with the introduction of capital gains taxation (in 1972), but the tenor of tax developments quickly changed, with the appearance of a whole stable of new shelters for saving in 1974 and the enrichment of previously existing shelters, such as the well-known registered retirement savings plans (RRSPs) and registered pension plans (RPPs) and dividend tax credit. Combined with fairly comprehensive indexation of the personal income tax (PIT), these measures made Canadian income taxes more bearable for many but contributed to a shortfall of revenue which produced very large federal deficits in the early 1980s. Since 1981 there has been a gradual tightening-up of the PIT, which has seen the termination of the majority of the important shelters. Thus, during the period 1970–90 saving incentives first

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grew and then receded.<sup>1</sup> There was a corresponding hump in Canadian personal saving rates, which peaked in 1982. The extent of the causal relation between these trends is an extremely interesting question. Some light may be thrown on this by the behavior of Canadian saving rates during the 1990s, since a distinct new phase began in 1991. In that year a sweeping reform of the RRSP/RPP system was introduced, and new higher contribution limits and carry-forwards are being phased in over the period 1991–95.

In addition to setting out the important features of Canadian PIT and reviewing recent tax history, this paper assembles a variety of data which provide a foundation for future analysis of the likely effects of the tax system on the level and composition of saving. We look at the national accounts figures on saving, national balance sheet data on household wealth and its composition, consumer survey data on both saving and wealth holding, and data from tax records on contributions to sheltered saving plans.

The paper is organized as follows. Section 2.2 presents an overview of household wealth holding and saving in Canada since 1970, using national accounts, national balance sheet, and sample survey data. In section 2.3 the relevant current features, and recent evolution, of the Canadian tax system are set out. The structure and use of tax-deferred retirement savings plans, and the salient features of social security in Canada, are reviewed in section 2.4. Finally, existing evidence on the impacts of government incentives for saving, on revenue as well as saving, is discussed in Section 2.5.

## **2.2 Overview of the Household Balance Sheet**

One significant contribution of this paper may be to help researchers who may be unfamiliar with Canadian data sources find information on Canada's tax system and household behavior. We begin, therefore, with a brief description of four data sources and then use these to shed some light on the household balance sheet.

### **2.2.1 A Brief Description of Some Data Sources**

One source is the Canadian system of National Accounts. These include the Income and Expenditure Accounts, the Financial Flow Accounts, and the National Balance Sheet Accounts. The Income and Expenditure Accounts provide information on gross domestic product (GDP) income-based, GDP expenditure-based, and their components. They monitor four main sectors—"persons and unincorporated business," "other business enterprises and financial intermediaries," "government," and "transactions with the rest of the world." The difference between income and outlay (excluding capital consumption al-

1. While we are confident that this is the right way to summarize the overall trend, as discussed in the body of the paper, the introduction of a lifetime capital gains exemption in 1985 (whose limit grew to \$100,000, where it was capped in the 1988 tax year), and a small increase in RRSP contribution limits in 1986, softened the withdrawal of other shelters in the late 1980s.

lowances) for each sector is gross saving. Over any time period, each sector's gross saving plus capital assistance equals its net acquisition of nonfinancial assets (investment) plus the excess of lending over borrowing. The Financial Flow Accounts measure transactions in financial assets that correspond to the saving and investment decisions of each sector. They also provide much more detail, especially on financial intermediaries, as the four sectors of the Income and Expenditure Accounts become 13 sectors in the Financial Flow Accounts. The National Balance Sheet Accounts comprise corresponding estimates of the stocks of physical and financial assets and liabilities.<sup>2</sup> We will use these quite heavily to see what financial and nonfinancial assets Canadian households hold in the aggregate.

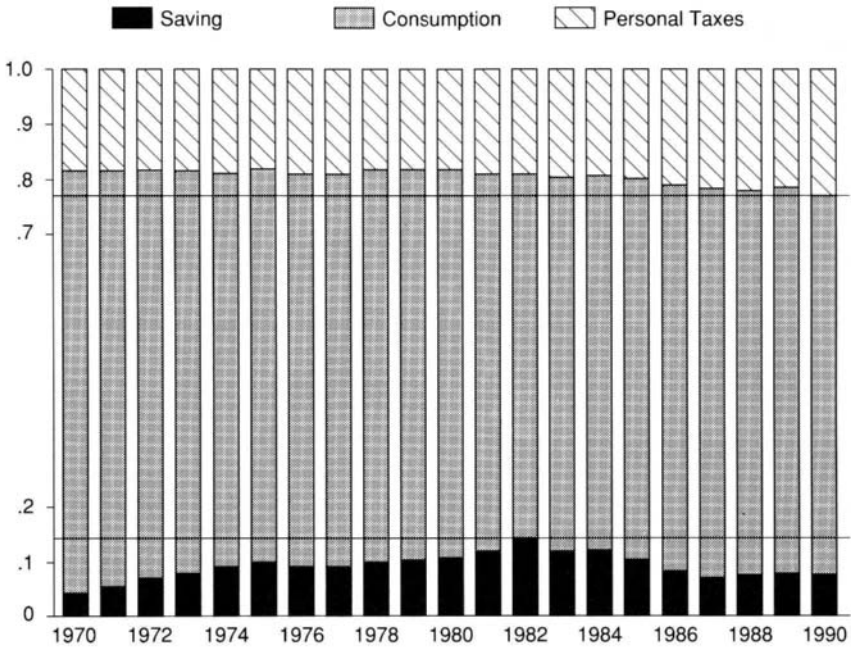
Statistics Canada also releases public-use sample tapes which report on individual responses to questionnaires based on subsamples of the Labour Force Survey sampling frame. In carrying out the research for this project, we will employ microdata drawn from various public-use sample tapes—four Family Expenditure (FAMEX) Surveys, two income, asset, and debt surveys by the Survey of Consumer Finances (SCF), and the annual SCFs (income) for economic families and individuals.<sup>3</sup> The FAMEX surveys are conducted in February and March and collect information on each household's income and expenditures during the previous calendar year; we have information for the 1978, 1982, 1984, and 1986 calendar years. The SCFs are conducted in late April and early May every year. About every seven years, the SCF measures family assets and debts as of the date of the survey and, as it always does, income for the previous calendar year. We have SCF asset and debt data for April/May 1977 and 1984. Public-use tapes for surveys of income exist for 1971–81 (biennial) and then 1982–90 (annual).

Two more sources of information are *Taxation Statistics* (annual), which is published by Revenue Canada (Ottawa, Ontario), and *The National Finances* (annual) and *The Provincial and Municipal Finances* (biennial), which are published by the Canadian Tax Foundation (Toronto, Ontario). The first publication contains facsimiles of federal income tax forms as well as descriptions of the tax code and tables based on samples of taxpayers. The other two publications provide succinct summaries of changes to the tax code as well as tables on the costs of various programs and the beneficiaries of these programs.

In the next section, we use some of the macrodata from the Income and Expenditure Accounts and the National Balance Sheet Accounts to initiate our exploration of personal saving and taxation. Thereafter we turn to microdata to focus on the asset and debt-holding behavior of Canadian families.

2. See Statistics Canada (1989) for a careful description of the role of the Income and Expenditure Accounts, the Financial Flow Accounts, and National Balance Sheet Accounts in the Canadian system of National Accounts. Many of the most frequently used data series are available in machine-readable form on CANSIM, a computerized data-retrieval system operated by Statistics Canada.

3. Microdata tapes may be purchased from the Data Dissemination Division, Statistics Canada, Tunney's Pasture, Ottawa, Canada, K1A 0T6.



**Fig. 2.1 Shares of personal income, 1970-90**

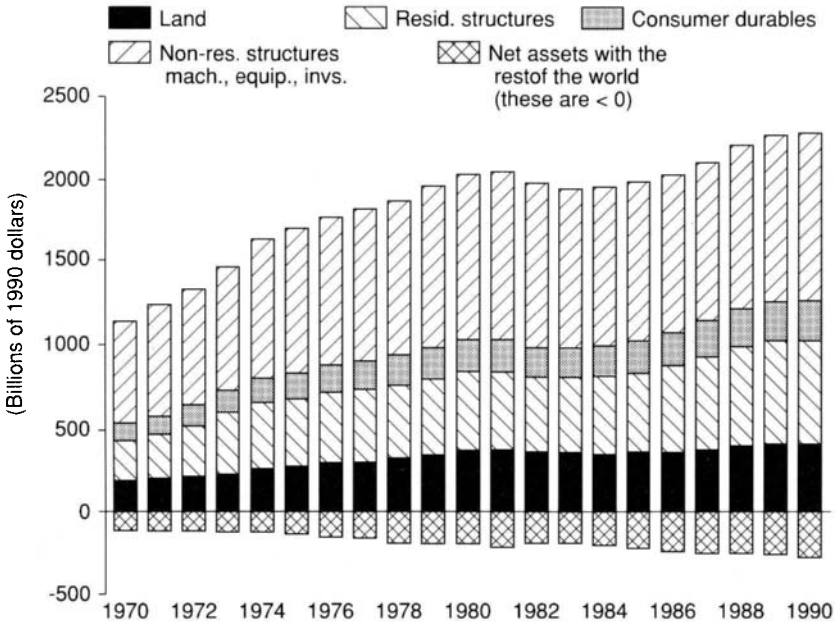
Source: Statistics Canada, CANSIM matrix no. 6632.

Note: "Personal income" includes the income of unincorporated businesses as well as persons and excludes capital consumption allowances and any capital assistance provided by the government (1990 personal income of \$580 billion may be compared with 1990 GDP at market prices of \$670 billion). "Personal taxes" are income and payroll taxes paid by persons and unincorporated businesses less funds transferred from the government to this sector (e.g., interest on the public debt). "Consumption" includes purchases of all new consumer durables (e.g., new cars), except housing.

#### *Evidence from Macrodata*

One may obtain some sense of the interaction between taxation and saving by using the Income and Expenditure Accounts to study the distribution of personal income across consumption, personal taxes, and saving, for the years 1970-90, as shown in figure 2.1. Figure 2.1 reveals that, according to the National Accounts measure, saving as a fraction of personal income exhibited a hump-shaped pattern over the 1970-90 period.<sup>4</sup> The saving rate out of personal income peaked at 14 percent in 1982, which represents a saving rate out of disposable income of nearly 18 percent. Figure 2.1 also shows the increase in

4. Personal savings, as measured by the National Accounts, are obtained by subtracting consumption from disposable income. The latter may be adjusted by subtracting the purely inflationary component of interest income. This flattens the personal saving series somewhat, but does not remove the measured rise in saving over the period 1970-81 (Beach et al. 1988, 24-29). A further adjustment to include accruing capital gains in income makes personal saving highly volatile, and makes it difficult to generalize about trends (Dagenais 1992).



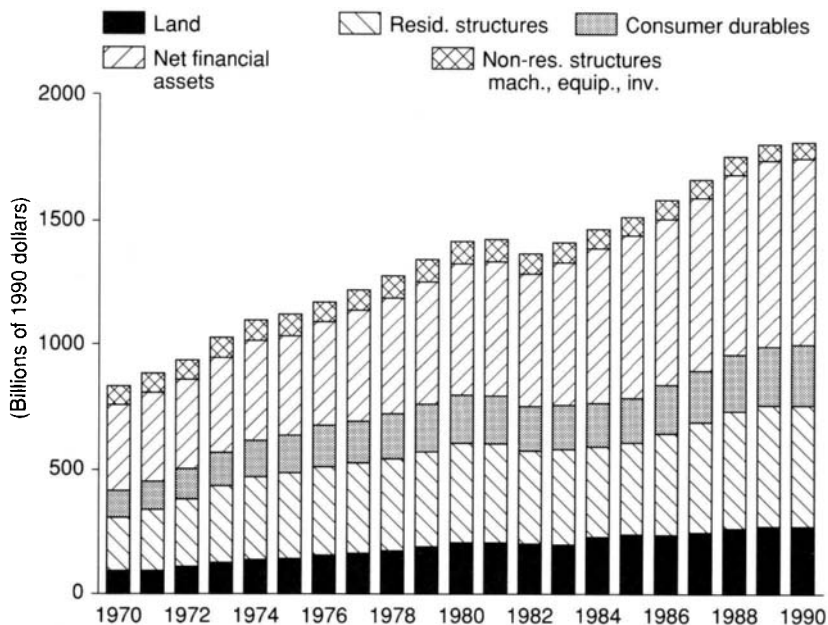
**Fig. 2.2 Components of national net worth, 1970–90**

Source: Statistics Canada, CANSIM matrix no. 792.

the ratio of personal taxes to personal income after 1985. The increase in the share of personal income taxed away has been associated with a decline in the apparent saving rate out of personal income. In fact, the National Accounts–based saving rate mirrors remarkably the at-first rising, and then declining, generosity of tax incentives for saving over this period.

The 13 sectors monitored in the National Balance Sheet Accounts may be aggregated to yield a picture of the country's net worth. These accounts provide annual estimates of the market value of physical and financial assets and liabilities. Physical assets comprise land, residential structures, consumer durables, nonresidential structures, machinery and equipment, and inventories. Net financial assets from the country's point of view represent its net claims on assets in the rest of the world, if positive, or the rest of the world's net claims on the country, if negative. The sum of the value of physical and net financial assets is the country's net worth.

Figure 2.2 shows the components of national net worth for the period 1970–90. Particularly noteworthy is the decline in real net worth after 1981; the 1981 level was not exceeded until 1987. Increases and declines in net worth are associated with similar movements in its components. The shares of land, residential structures, consumer durables, and so on, are very stable. Even Canada's net foreign indebtedness rose only from 11.2 percent of net worth in 1970 to 12.7 percent of net worth in 1990, which is somewhat surprising in view of



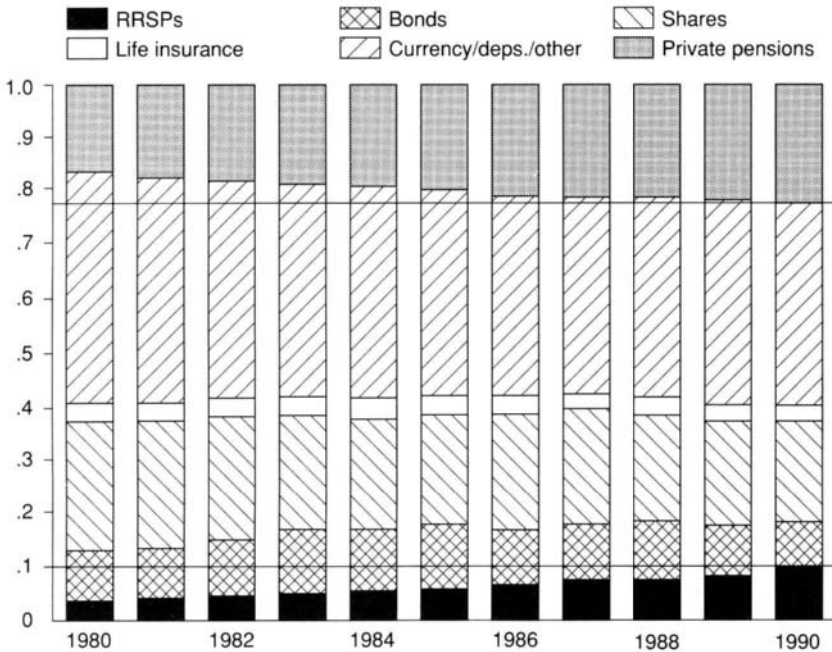
**Fig. 2.3 Components of personal net worth, 1970–90**

*Source:* Statistics Canada, CANSIM matrix no. 751.

the very large deficits run over much of this period by the federal government.

Figure 2.3 repeats figure 2.2 for the personal and unincorporated business sector. Like national net worth, personal net worth declined in real terms after 1981, but only for two years. Once again no component appears to have grown out of step with the rest. One interesting feature of figure 2.3 is the size of net financial assets relative to real assets. The major items in net financial assets are currency and bank deposits, deposits in other institutions, bonds, shares, and the assets of private pension funds. For the “average household’s” portfolio, real wealth is more important than net financial wealth. It is also worth noting that wealth held in the form of land is about equal to wealth held in the form of consumer durables. Another important implication of figure 2.3 is that about half of personal wealth is held in real assets which attract no personal income tax (PIT): owner-occupied houses (including the value of the land they stand on) and consumer durables.

We have obtained national balance sheet data from Statistics Canada which enable us to examine the components of personal financial assets, including RRSPs, private pension funds, saving through life insurance, bonds, shares, and currency/deposits, for the period 1980–90. The shares of each category are shown in figure 2.4. The share accounted for by RRSPs clearly has the highest growth rate, rising from 4 percent in 1980 to 10 percent in 1990. The



**Fig. 2.4 Shares of personal financial assets, 1980-90**

*Source:* Special compilation by Statistics Canada.

share of another tax-sheltered instrument, private pensions, also grew, from 17 percent in 1980 to 22 percent in 1990. Currency/deposits and shares declined in importance over the 1980s. It is reassuring to observe that tax incentives do seem to exert some influence on portfolio composition. Savings have been channeled more and more into the few remaining fully sheltered forms, fleeing assets which are increasingly exposed to income taxation.

We saw above that about one-half of personal net worth is in the form of owner-occupied housing and consumer durables, neither of which is taxable under the PIT. Figure 2.4 indicates that currently about one-third of personal financial assets are in fully sheltered forms—RRSPs or private pensions. Putting these two facts together, about two-thirds of personal wealth is fully sheltered from PIT in the Canadian system. Income on the remaining one-third is in principle fully taxable, but the effective tax rates vary widely, as implied by the discussion in section 2.3.

#### *Evidence from Microdata*

The public-use tapes from the 1977 and 1984 SCFs include information on households' financial assets (e.g., deposits, bonds, stocks and shares, and RRSPs) and nonfinancial assets (e.g., market values of cars and owner-occupied homes and equity in businesses). While households were asked to



**Table 2.1** Financial and Nonfinancial Assets and Net Worth of Families and Unattached Individuals: 1977 and 1984 SCFs (1990 \$)

	1977			1984		
	Financial Assets	Nonfinancial Assets	Net Worth	Financial Assets	Nonfinancial Assets	Net Worth
Weighted means	25,557	101,355	107,790	27,724	98,192	110,374
Quantiles:						
.2	694	1,165	2,306	546	1,293	2,768
.5 (median)	5,020	64,758	49,873	6,020	58,457	50,980
.8	26,788	149,084	153,510	34,971	133,209	153,334
Shares of top:						
10%		50.7			51.4	
5%		37.6			37.5	
2%		24.8			23.9	
1%		17.6			16.9	
No. of observations		12,734			14,029	

*Source:* Authors' calculations using Statistics Canada's SCF public-use microdata tape.

report premiums paid for employer-sponsored pension plans and life insurance policies, it would be very difficult to estimate private-pension wealth or life-insurance wealth from these numbers. Also absent are estimates of wealth held in the form of consumer durables other than vehicles and housing. The reporting of debts is much more comprehensive but it lacks the detail accorded assets. These facts mean that reported net worth is underestimated; for example, if a household had taken out a bank loan to purchase a refrigerator, the liability would have been recorded but not the asset. They also imply that one cannot obtain clean estimates of net worth in financial versus nonfinancial assets; the data do not permit one to determine whether a loan is for the purchase of, say, shares or an automobile. In tables 2.1 and 2.2 we report financial assets and nonfinancial assets (none of the household's debt is attributed to these assets) and net worth (total assets minus total debts).

It is clear from table 2.1 that, while average levels of household assets and net worth are substantial, many households hold little wealth, particularly financial assets. Median holdings of financial assets in 1990 dollars (about \$5,000 in 1977 and \$6,000 in 1984) may be compared to each survey's estimate of median after-tax income of about \$28,000 for both years. Over 60 percent of households have at least some equity in housing, which accounts for the relatively higher numbers for nonfinancial assets and net worth. It is intriguing that .5 (median) and .8 quantiles for nonfinancial assets declined between 1977 and 1984. Since the rise in median financial assets more or less matches the rise in median net worth, households appear to have reduced their debts over this period. This is not surprising since interest rates were extraordinarily high in the early 1980s. Finally, we note that the share of wealth held by the top 5 percent of households was virtually constant across the two surveys but that

**Table 2.2** Financial and Nonfinancial Assets and Net Worth of Urban, Married-Couple Families: 1977 and 1984 SCFs (1990 \$)

	1977			1984		
	Financial Assets	Nonfinancial Assets	Net Worth	Financial Assets	Nonfinancial Assets	Net Worth
Weighted means	23,799	114,818	111,323	34,787	123,818	136,275
Quantiles						
.2	1,502	10,948	14,759	1,520	12,933	17,615
.5 (median)	7,540	101,330	78,581	10,139	90,530	81,071
.8	30,679	166,322	165,739	44,489	160,368	185,241
Shares of top						
10%		38.1			45.2	
5%		26.1			32.8	
2%		16.1			21.5	
1%		11.0			15.4	
No. of observations		5,317			6,012	

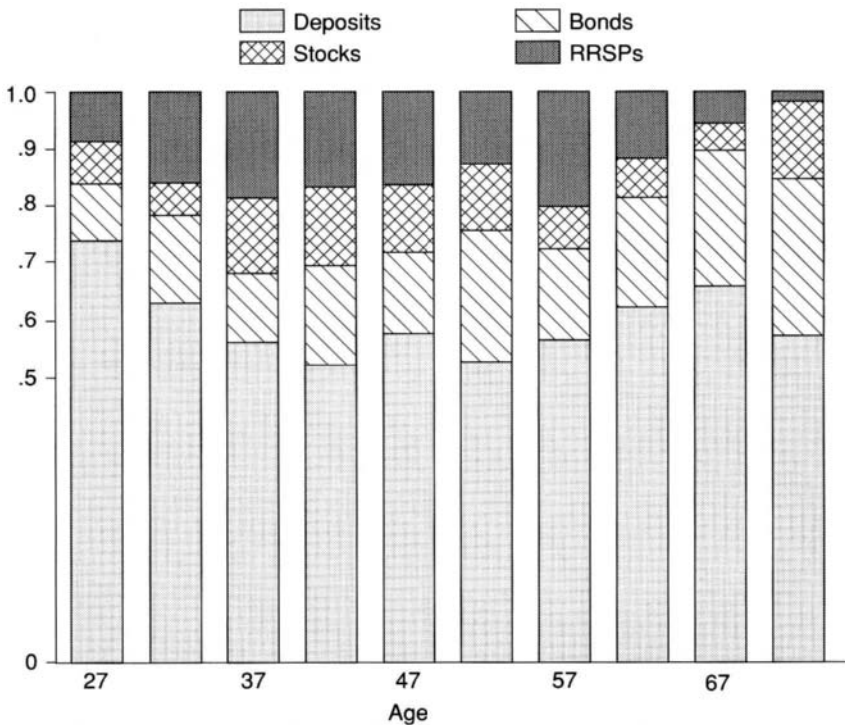
Source: Authors' calculations using Statistics Canada's SCF public-use microdata tape.

the share of the top 10 percent rose slightly, and the shares of the top 2 percent and 1 percent fell slightly between 1977 and 1984.<sup>5</sup>

Measuring the assets and debts of any household is difficult, but it is particularly so for those whose income originates primarily from self-employment (e.g., farming or fishing). In addition, it is instructive to focus on a more homogeneous group of households. Table 2.2 repeats table 2.1 for urban households with the following characteristics: married couples, husband's age greater than 25, husband not self-employed, and husband's main occupation not farming or fishing.

As one might expect, means and quantiles are generally higher in table 2.2; median financial and nonfinancial assets and median net worth are about 50 percent higher for both years. Nevertheless, for most households financial assets are still a small proportion of after-tax incomes, which, in 1990 dollars, were about \$38,000 in 1977 and \$39,000 in 1984. It is also not surprising that wealth is less concentrated within a more homogeneous group of households. All of the percentages reported in table 2.2 are lower than the corresponding numbers in table 2.1. The sharp increase in apparent wealth concentration between 1977 and 1984, however, is surprising, especially since there was little

5. As is the case with most sample surveys, there are major difficulties in using the SCF surveys to estimate inequality in the distribution of wealth (see Davies 1979). The top shares shown in the table are underestimates since, in practice, the surveys do not reach very far into the upper tail. The highest net worth of a family observed in the 1984 SCF, for example, was \$6 million. By consulting journalistic sources and work done by private consultants, Davies (1993) concludes that in 1984 the share of the top 1 percent in the Canadian wealth distribution was likely less than in the United States or Britain, but quite a bit higher than indicated by the SCF. A number in the range 25–30 percent is a "best guess." There is insufficient evidence to establish trends over time.



**Fig. 2.5** Components of family financial assets by age, 1977

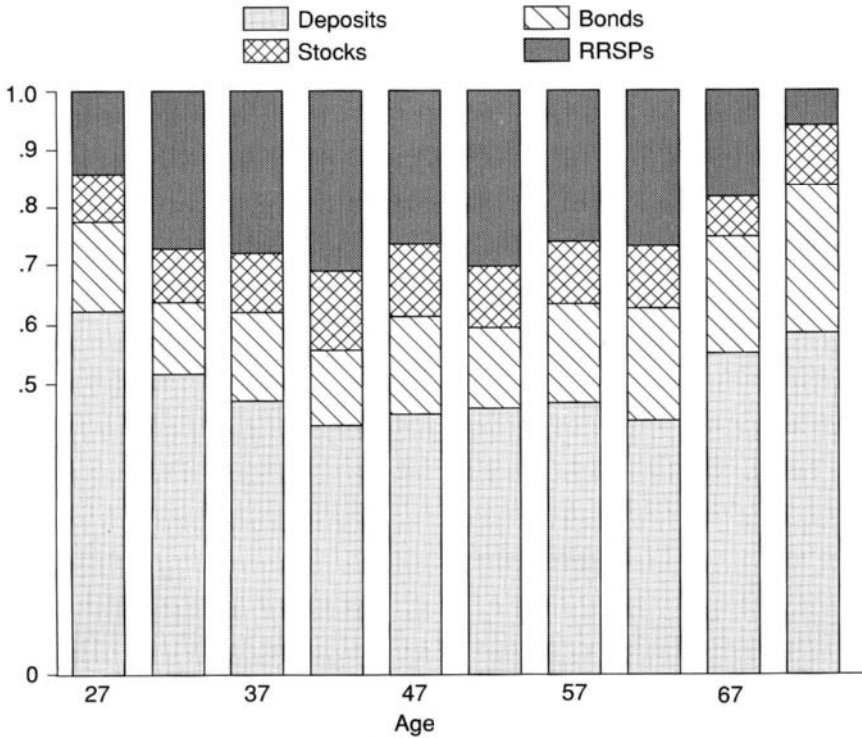
Source: Statistics Canada, 1977 SCF.

change for the full samples in table 2.1 and that was mainly in the opposite direction.<sup>6</sup>

We have used these data to examine the portfolio composition of household financial assets and debt, conditional on husband's age. Figures 2.5 and 2.6 study the four main assets in the average household's portfolio of financial assets, by age, for 1977 and 1984. Two points are worth noting. First, for each year, middle-aged families have more diversified portfolios than either younger or older families. Second, between 1977 and 1984, families at all stages of the life cycle substituted RRSPs for deposits in financial institutions.

Figures 2.7 and 2.8 show the components of household debt. The 1977 and 1984 SCFs group debt into three categories: (i) mortgage outstanding on owner-occupied house; (ii) consumer debt, which includes charge accounts and all credit card debt, loans from chartered banks secured by household goods, certain loans from chartered banks, trust companies, and other financial

6. The increase in apparent inequality is not simply due to outliers. This is indicated by the increasing gap between median and .8 quantile wealth between the two years. In 1977 wealth at the .8 quantile was 110.9 percent higher than the median; in 1984 the gap had increased to 128.5 percent.



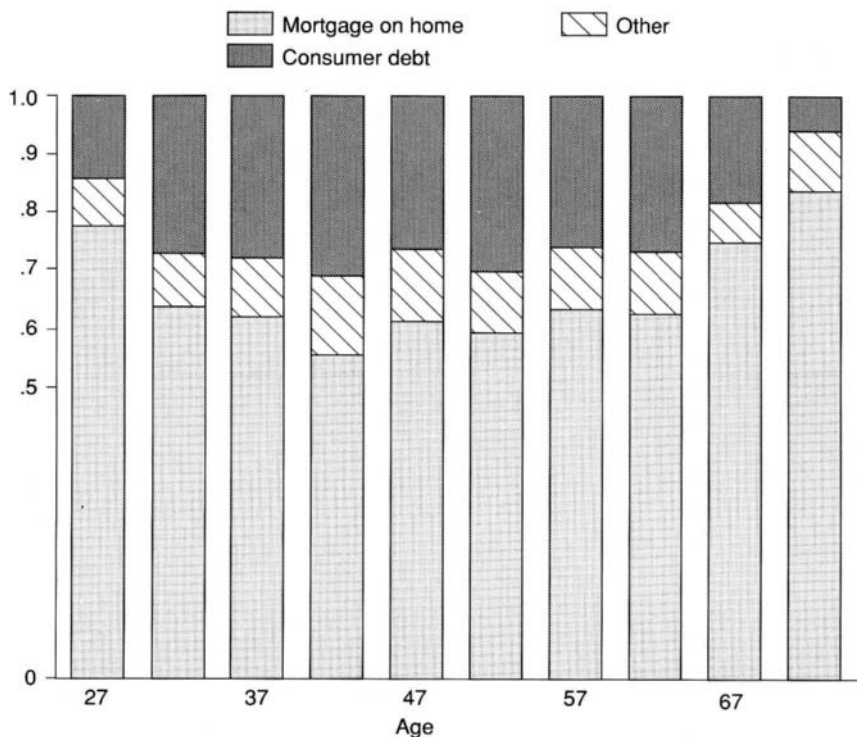
**Fig. 2.6** Components of family financial assets by age, 1984

*Source:* Statistics Canada, 1984 SCF.

intermediaries; and (iii) other debt, which includes loans from chartered banks secured by stocks and bonds, loans for the renovation of residential property, student loans, loans from stock brokers, insurance companies, savings banks, etc., unpaid bills for medical and dental care, and money borrowed from members of other households. Figures 2.7 and 2.8 clearly reveal the predominance of mortgage debt at all stages of the life cycle, with some tendency for mortgage debt to decline in importance with age. The graphs for 1977 and 1984 are very similar except in two respects. First, the 70–75 age group had a much larger share of its debt in mortgages in 1984 than in 1977. Second, “other” debt was more important late in the life cycle in 1984 than in 1977. We now turn to a description of the rules for the taxation of capital income.

### 2.3 Taxation of Capital Income

This section outlines the general features of the Canadian PIT and its treatment of capital income, other than the provisions for sheltered retirement saving, which are discussed in section 2.4.



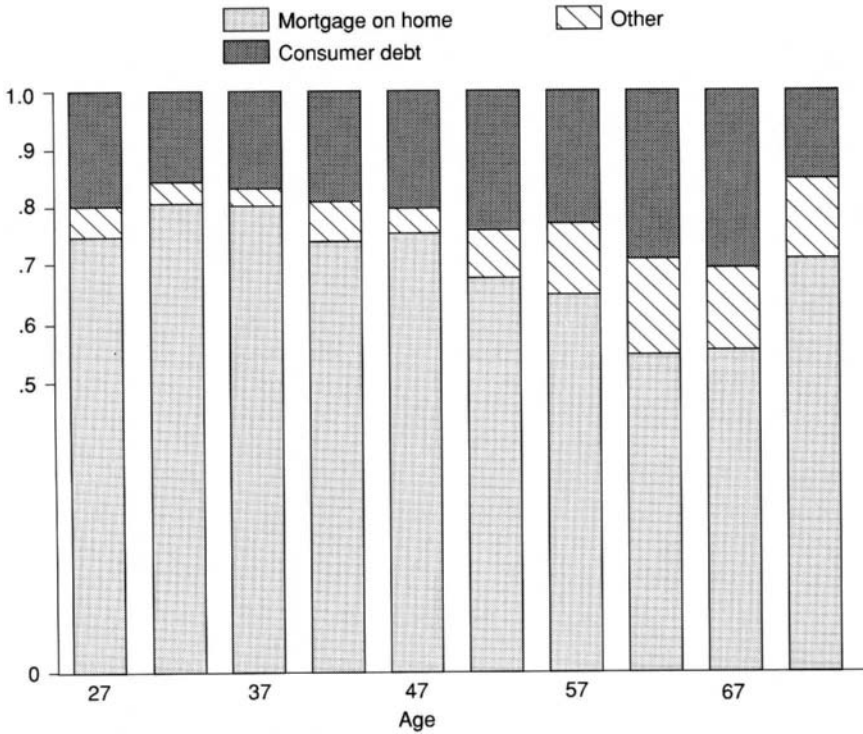
**Fig. 2.7 Components of family debt by age, 1977**

Source: Statistics Canada, 1977 SCF.

### 2.3.1 General Features of PIT

The Canadian PIT is levied on an individual basis and, since the 1987 tax reform, has imposed marginal tax rates at the federal level of 17, 26, and 29 percent in three tax brackets. Since 1987 a system of nonrefundable personal credits rather than deductions has been in force. There are also sizable refundable credits—the GST (sales tax) and child tax credits—which introduce an element of negative income tax.<sup>7</sup> Provincial PIT is a flat percentage of the federal tax (although not in Quebec, which has a separate PIT), except for various provincial surtaxes and special credits (e.g., property tax credits for low-income or elderly taxpayers) implemented from time to time.

7. In 1991 the 17, 26, and 29 percent tax rates applied in brackets whose limits were 0–\$28,784, \$28,785–\$57,567, and \$57,568+ in terms of taxable income. The personal credits were \$1,068 for each taxpayer plus \$890 for a dependent spouse, \$69 for the first two children, and \$138 for additional children. (In single-parent families, the credit for the first child was \$890.) The child tax credit was worth \$585 per child, and the GST credit \$190 per adult and \$100 per child. The child tax and GST credits were taxed back at a 5 percent rate on family income in excess of \$25,000.



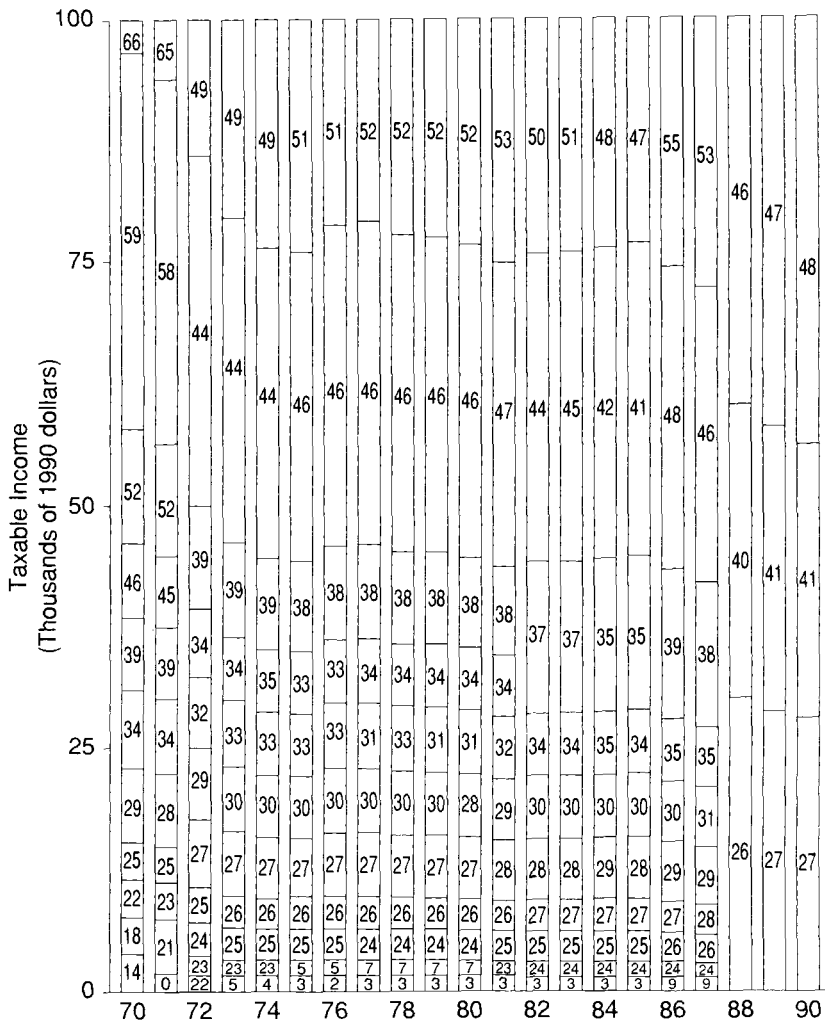
**Fig. 2.8 Components of family debt by age, 1984**

Source: Statistics Canada, 1984 SCF.

Figure 2.9 summarizes combined federal and Ontario tax brackets and marginal tax rates for the period 1970–90.<sup>8</sup> There have been three significant regime changes over this period. One, the reduction in the top marginal tax rate from 63 to 50 percent in 1982, is not apparent in figure 2.9 since the graph only shows tax rates on income up to \$100,000. The other two regime changes are apparent in figure 2.9. First, 1972 saw the PIT base broadened substantially and marginal tax rates on high-income individuals reduced dramatically.<sup>9</sup> This represented a reaction to the recommendations of the Carter Commission, whose “a buck is a buck” philosophy suggested that the income tax base should be as comprehensive as possible. Thus, even most transfer payments have been taxable since 1972. There are, of course, significant exclusions from the tax base. These include, for example, social assistance (“welfare”) pay-

8. The interaction of federal and Ontario surtaxes makes these calculations difficult. We have used the basic federal tax brackets and simply reported the highest marginal tax rate possible in each bracket.

9. Prior to 1972, marginal tax rates on high incomes were steeply graduated, actually exceeding 100 percent on taxable income over \$1,500,000 (1990 dollars) per annum!



**Fig. 2.9 Tax brackets and marginal tax rates for a resident of Ontario earning less than \$100,000 (1990 dollars): 1970-90**

Source: Revenue Canada, *Taxation Statistics* (Ottawa, various issues).

ments made by municipalities and provinces, imputed income on owner-occupied housing, capital gains on principal residences, and the first \$100,000 of otherwise taxable capital gains, under the lifetime capital gains exemption. A second regime change is that, effective January 1, 1988, 10 tax brackets were collapsed to three and combined federal and provincial tax rates were reduced for most people (the exceptions are clear from fig. 2.9).

Even with figure 2.9 much more work would be required to generate careful estimates of weighted average marginal tax rates. One can get some sense of what these rates would be, however, by using data from *Taxation Statistics* to see how individuals are distributed across the tax brackets graphed in figure 2.9. These numbers show for example that, in 1970, less than 1 percent of taxpayers faced marginal tax rates of 66 percent or higher. More important, we find that median total (pretax) income in 1990 dollars is remarkably constant over the 1970–90 period at about \$27,000, corresponding to taxable income in the range \$15,000–\$20,000. Marginal tax rates in this range were very stable around 30 percent until 1988 when they dropped to 26 percent. Looking across incomes, a similar pattern is observed at most levels, although there are particular ranges where, for example, marginal tax rates rose with tax reform in 1988. Summarizing, it seems quite likely that average marginal tax rates in Canada were fairly stable from 1970–87 but declined a few points in 1988.

Although we are not explicitly concerned with the corporate income tax (CIT) in this paper, it is important to have in mind some of its salient features. As under the PIT, most provinces piggyback on the federal CIT, which is levied at a standard rate of 28 percent on “general business.” Adding on provincial taxes, the total CIT rate varied from 44 to 46 percent across provinces in 1991. Lower rates apply to manufacturing and processing profits (23 percent federal rate) and the first \$200,000 of income for a Canadian-controlled private corporation (CCPC)—the “small business” rate of 12 percent. Including provincial taxes, the total CIT rate for manufacturing and processing varied between 30 and 41 percent in 1991, and the small business rate varied between 16 and 23 percent (see Canadian Tax Foundation 1992, tables 7–18 and 7–20).

### 2.3.2 Incentives for Saving—General Trends

As mentioned earlier, the period 1970–90 saw at first increasingly generous tax incentives for saving, and then a decline. In contrast, the period 1990–95 will see increasing generosity of such incentives as new, higher RRSP/RPP limits are phased in. The rate of shelter innovations over the last two decades has been high. A complete recounting of this history would be tedious. The following discussion highlights the most important trends.

### 2.3.3 Interest and Pension Income

From 1974 until 1987 (inclusive) interest received by Canadian taxpayers was partially exempt from tax under the \$1,000 investment income deduction.<sup>10</sup> Since this deduction was fixed in nominal terms during years of significant inflation, it became less generous over time. In addition, since it was deduction for *nominal* interest income, in periods of high expected inflation for

10. This deduction is perhaps more frequently referred to as the interest and dividend deduction, since in the most recent period that it was in force it applied only to interest and dividends. Older literature, however, refers to it as the investment income deduction, since it extended to domestic capital gains between 1977 and 1984.



many taxpayers it sheltered less of their real interest income. This aspect has, in practice, been quite important since the Canadian inflation rate, and nominal interest rates, have at times been quite high in the last two decades.

A further important preference for interest income was that, until the mid-1980s some major deferrals were available. Interest accruing on a Canada Savings Bond (CSB) or Guaranteed Investment Certificate (GIC), for example, did not have to be taxed until maturity. Now the interest on such assets is computed and taxed every year.

Annuity income received as part of a pension plan has also received special treatment, effectively an incentive to save via such plans. From 1975 until 1987, the first \$1,000 of pension income was not taxed. Since then, together with the conversion of personal deductions to credits in the Canadian tax reform, the first \$1,000 is creditable for federal taxes at a 17 percent rate (which corresponds to the marginal tax rate in the lowest bracket).

An important feature of the Canadian PIT is that no consumer interest is deductible. Thus, unlike most other countries, Canada does not have mortgage interest deductibility. This puts interest *payments* (as opposed to *receipts*) on a consumption tax basis.<sup>11</sup> This simple provision likely acts as a powerful personal saving incentive. Although Canadians take on considerable mortgage debt, they typically pay it off at a high rate.

In contrast to the probity of the Canadian PIT with regard to consumer debt, there is no effective limit on the deductibility of interest for business or investment purposes. As we shall see below, although the PIT has been tightened up considerably in recent years, there are various ways in which the income produced by assets acquired with debt finance can be sheltered from tax (e.g., via the lifetime capital gains exemption), so that, looking at the PIT in isolation, the unlimited deductibility is “too generous.” Rather than simply not penalizing saving, the tax system in such cases actually subsidizes it.

One interesting example of excess interest deductibility for saving or investment purposes in the Canadian system is that prior to November 13, 1981 (budget day), interest on funds borrowed to purchase an RRSP was deductible. Termination of that provision is another example of how incentives for saving were reduced in the 1980s.

### 2.3.4 Dividends

The Canadian tax system has partially integrated corporate and personal income taxes, via the dividend tax credit. Under this system, dividends paid by taxable Canadian corporations are first “grossed up” by 25 percent, to get back (partially) to the underlying corporate income on which the dividend is based

11. Note that while annual income tax advocates would, in principle, be in favor of the deduction of real mortgage interest, their support for such deductibility is conditional on the full income from owner-occupied houses—i.e., both imputed rent and capital gains—being taxed. Thus (thankfully) consumption tax and income tax supporters can agree that mortgage interest deductibility is handled correctly in Canada.

(i.e., to allow for CIT payments). A credit is then allowed which is equal to 13.33 percent of the grossed-up amount. Note that this arrangement creates a bias toward holding shares of domestic rather than foreign companies.

The Canadian dividend tax credit has an obvious shortcoming in comparison to a scheme of full integration of PIT and CIT. This is that the gross-up and credit factors are arbitrary and may differ considerably from what is appropriate for a particular corporation. For full integration the gross-up factor should equal  $\tau_c/(1 - \tau_c)$ , where  $\tau_c$  is the actual CIT rate levied, and the credit rate should simply be  $\tau_c$ . Thus, for a firm facing the general business tax rate of 28 percent, the gross-up factor should be approximately 39 percent and the credit rate 28 percent. For a manufacturing and processing firm the rates should be 30 and 23 percent, and for a small business they should be 14 and 12 percent.

Before jumping to the conclusion that the Canadian dividend tax credit is generally inadequate to achieve CIT/PIT integration, note that the credit is received irrespective of whether the corporation actually paid tax. Although CIT has been tightened up recently, along with the PIT, it is still true that many profitable corporations do not pay tax—as a result of accelerated depreciation, investment tax credits (still available in certain regions), resource sector incentives, and the carry-forward of losses.

The extent of relief under the dividend tax credit can be gauged by comparing the amounts claimed with CIT collections. In 1989, for example, the dividend tax credit reduced PIT burdens by \$655 million, which compares with federal CIT revenues of \$12.0 billion in that year. Even allowing for the fact that many taxpaying corporations were foreign rather than domestic, it seems clear that overall the dividend tax credit fell short of canceling out the CIT burden of domestic corporations.

As observed earlier, the dividend tax credit has been present throughout the entire period since 1970. However, its generosity has changed substantially over time. In 1970 and 1971 the credit was not yet of the “gross-up and credit” variety. Instead a credit equal simply to 20 percent of the dividend received was allowed. In 1972 a one-third gross-up was introduced, and the credit equaled 20 percent of the *grossed-up* amount. Then, in 1976 the credit was raised to the highest level it has ever taken on, with a 50 percent gross-up and 25 percent credit on the grossed-up amount. This very generous dividend tax credit remained in force until the end of 1986.<sup>12</sup> Since then, the gross-up factor has been reduced in stages—to 33.3 percent in 1987, and 25 percent in 1989.

### 2.3.5 Capital Gains

Capital gains taxation was introduced in Canada in 1972 as part of the government’s response to the recommendations of the Carter Commission. Cana-

12. The 25 percent credit was reduced to 22.67 percent in 1982, but the 50 percent gross-up remained in force.

dians are taxed on realized capital gains earned since valuation day in December 1971. Currently, three-quarters of realized gains are taxable. (Prior to the 1987 tax reform only one-half of gains were taxed.) Principal residences are exempt, and each taxpayer has a standard \$100,000 lifetime capital gains exemption.<sup>13</sup> The latter can be increased to \$500,000 for capital gains on disposition of qualified farm property or the shares of small-business corporations.<sup>14</sup> Benefits of the lifetime exemption are deferred somewhat for those taxpayers who have net investment losses. Such losses, which include interest expense incurred for investment purposes, are cumulated starting in 1987 (in the form of a CNIL—cumulative net investment loss) and must be fully offset by positive investment income before any capital gains are eligible for the lifetime exemption.

An important feature of capital gains treatment in Canada is that gains are deemed to be realized when a taxpayer loses Canadian residence or dies. The latter feature—deemed realization on death—was felt to be sufficiently onerous that federal gift and estate taxes were abolished when capital gains taxes were introduced in 1972. Provincial succession duties remained in force in most provinces initially but have since all been removed. Thus Canada is unique now in having deemed realization of capital gains on death but no wealth transfer taxes.

Whether one counts tax-based savings incentives or looks at their provisions, there is a generally hump-shaped time profile of the generosity of shelters over the period 1970–90. The introduction of the lifetime capital gains exemption in 1985 bucked this trend. How important is this exception? The cumulative amounts that could be sheltered under the exemption were initially fairly small—\$10,000 in 1985, \$25,000 in 1986, and \$50,000 in 1987. And when the exemption hit \$100,000 in 1988, a phase-in of the three-fourths taxation of capital gains also began. Thus, while capital gains taxation has clearly become lighter for small investors, for the genuinely wealthy it has become heavier—with the 50 percent increase in the inclusion rate swamping the lifetime exemption.

The effective weight of capital gains taxes was further reduced in the pre-1981 period by the availability of a sophisticated averaging device known as the income averaging annuity contract (IAAC). These annuities could be taken out to average over a lengthy period nonrecurring income, such as that earned by artists or professional athletes and capital gains. Tax would then be charged on the annuity instead of the initial income. Astute investors could make use of the additional flexibility in tax timing afforded by an IAAC to significantly reduce their eventual total tax liability on a capital gain.

13. The lifetime capital gains exemption was introduced in the May 1985 budget. Originally it was to be phased in until it reached the level of \$500,000. The 1987 tax reform halted the phase-in at the \$100,000 level, except for the two types of gains indicated below.

14. The sum of exempt capital gains of all types cannot exceed \$500,000.

### 2.3.6 Life Insurance

The rules governing the tax treatment of the investment income accruing under life insurance policies were completely revamped in Canada about 12 years ago. Prior to that time, this investment income accumulated tax-free (and disbursements to beneficiaries were tax-free). Now, only policies which pass a fairly rigorous test to assure that they provide only insurance, and not an investment element, are given exempt status. Policies issued before December 2, 1982, however, are "grandfathered." (Income earned as a result of premiums in excess of those fixed prior to December 2, 1982, is, however, taxable. Thus there is no marginal incentive for life insurance saving for the holders of those policies.) Investment income accruing in those policies issued between December 2, 1982, and December 31, 1989 is taxed every three years, and that produced by policies purchased after 1989 must be included in taxable income every year.

### 2.3.7 Other Tax Shelters

From the mid-1970s to the early 1980s, the Canadian PIT featured a virtual cornucopia of tax shelters. (This was also a period in which a very serious federal deficit emerged, so that the tax shelter proliferation was probably not sustainable.)<sup>15</sup> As under the CIT, generous investment tax credits and accelerated depreciation were available to businesspersons. In addition, a variety of special vehicles had been devised or sanctioned to encourage activity in housing, mining, energy, research and development, and Canadian films. As a result of the general tightening-up of the Canadian income tax system since 1984, most of these tax shelters have been eliminated. The most significant remaining ones are for exploration and development in mining and oil and gas.

While "other tax shelters" are decreasingly important in Canada, in thinking about patterns of saving and investment over the last two decades, it is quite important to bear their features in mind. Here we summarize the history of shelters for housing, exploration and development, and Canadian films since 1970.

A tax shelter for multiple-unit residential buildings (MURBs) was introduced in 1974 at a time of rapidly rising house prices and rents, in order to encourage rental construction. These MURBs allowed losses on approved projects to be deducted against other sources of income and allowed such "soft costs" as interest on construction financing, mortgage fees, and legal and accounting fees, which typically formed about 25 percent of the cost of constructing a building, to be immediately expensed. Concern over revenue losses

15. The virtually full indexation of the PIT in this period also contributed to the development of the deficit problem. One could perhaps argue that the proliferation of shelters would have been sustainable with partial indexation. (The May 1985 federal budget introduced partial indexation, effective in the 1986 tax year. This system, which only adjusts brackets for increases in the CPI in excess of 3 percent, is still in force.)

led to the requirement that soft costs be amortized over the life of a building, and to the eventual termination of the shelter in 1981. No new MURBs could be created after 1981, but existing MURBs were allowed to continue fully in force until June 17, 1987. After that date, if a MURB was sold, eligibility for special treatment of rental losses would be lost. Finally, MURBs are now close to being fully phased out. By 1994 they all will have lost their favored treatment.

Another important housing-related incentive was the Registered Home Ownership Savings Plan (RHOSP), also introduced in 1974, but terminated by the May 1985 federal budget. This plan allowed deductible contributions of up to \$1,000 per year and \$10,000 in total. Interest in the plan accrued tax-free, as in an RRSP. Funds withdrawn to purchase a house were tax-free.

Throughout the period under consideration, there have been very generous incentives for exploration and development in mining and in oil and gas. Mining and energy companies can pass through their exploration and development expenses directly to personal investors via limited partnerships or "flow-through shares." The immediate tax benefits are substantial. Canadian Exploration Expenses are immediately written off;<sup>16</sup> Canadian Development Expenses receive a 30 percent write-off; Canadian Oil and Gas Property Expenses are written off at a 10 percent rate.

One of the most remarkable episodes in Canadian tax history was that of the Scientific Research Tax Credit (SRTC), introduced in 1983 and withdrawn in haste only two years later (by a new government). The SRTC allowed R&D losses to be sold to individuals. It became an unexpectedly popular tax shelter, with much highly questionable "R&D" being performed in order to manufacture the credits. The revenue losses amounted to over \$1 billion, despite the short lifespan of the shelter.

Finally, the tax shelter for certified Canadian feature films dates from 1974. This initially allowed the immediate write-off of the depreciable costs of producing a film with specified levels of Canadian inputs. This was replaced by a reduction in the depreciation rate to 50 percent, and then to 30 percent in 1988. The shelter now applies to videotape as well as film. Alongside the decreased tax incentive there has been much less activity in the Canadian feature film industry.

### 2.3.8 Alternative Minimum Tax

An important feature of the current Canadian PIT is the alternative minimum tax (AMT) introduced in 1986, which may have a dramatic effect on the effective marginal tax rate on personal capital income if an investor has received

16. Canadian Exploration Expenses (CEE) are included in the calculation of the cumulative net investment loss (CNIL) referred to above. Thus, making use of these expenses may result in tax being paid on capital gains that otherwise could qualify for the lifetime capital gains exemption. (Note, again, that the taxpayer does not permanently lose access to his lifetime capital gains exemption. It is merely deferred until his CNIL is wiped out by positive investment income.)

large capital gains or made significant investments in tax shelters. In the calculation of AMT, a basic exemption of \$40,000 is allowed, and individuals retain their basic personal tax credits (but *not* the dividend tax credit discussed above). The federal minimum tax rate was 17 percent in 1991; adding provincial taxes brings this up to 25–28 percent across the provinces. These rates are applied to “adjusted taxable income,” which differs from ordinary taxable income through the addition of the nontaxable quarter of capital gains, RRSP and RPP contributions, deductions for Canadian oil and gas exploration and development expenses, and losses arising from capital cost allowance claims on MURBs or Canadian films (see above).

## 2.4 Tax-deferred Retirement Savings and Social Security

There are several important forms of deferred retirement saving in Canada: (i) employer- or union-based pensions—known as registered pension plans (RPPs), (ii) individual accounts similar to IRAs in the United States—known as registered retirement savings plans (RRSPs), and (iii) deferred profit sharing plans (DPSPs).<sup>17</sup> The main element is the RRSP/RPP system, which has always been integrated and has recently been rationalized and enhanced (starting in 1991) (see Horner 1987). The enhancement of this system moves contrary to many of the other changes in the Canadian PIT in recent years, which have increased the taxation of capital income.

### 2.4.1 RRSP/RPP Contribution Limits

As in most countries, Canadians can save via occupational pension plans—RPPs—where contributions are deductible, income accrues tax-free, and pension income is taxed when it is received. Both employer and employee contributions are deductible. There are two major types of RPP: defined-benefit and money-purchase plans. Defined-benefit plans have been the most popular, since until recently it was possible to shelter more saving under these plans than under money-purchase plans.

Under the former RRSP/RPP system, taxpayers who were not members of an RPP could each year contribute to an RRSP the lesser of \$5,500 or 20 percent of earnings. Taxpayers covered by an RPP at work, and their employers, could each contribute up to \$3,500 to an RPP. In addition, the taxpayer could contribute to an RRSP as long as the combined (nonemployer) contributions

17. Deferred profit sharing plans are similar to money-purchase pension plans, except that they give generally greater flexibility. They are not subject to federal or provincial pension benefits legislation; there is more flexibility in the time pattern of contributions; investments in the shares of the employer corporation are allowed; withdrawal prior to termination of employment and payout in either lump sum or installment form is allowed. The contribution limit is the lesser of (a) 18 percent of salary or (b) 50 percent of the money-purchase RPP contribution limit. The use of DPSPs has declined dramatically since new rules denying a deduction for contributions to plans for the benefit of significant shareholders and related persons were introduced. We have not looked at DPSPs in any detail in this study.

Table 2.3 RRSP Contribution Limits, 1970-94

Year	Nominal Dollars		1989 Dollars	
	Not RPP Eligible	RPP Eligible	Not RPP Eligible	RPP Eligible
1970	2,500	1,500	9,191	5,515
1971	"	"	8,929	5,357
1972	4,000	2,500	13,652	8,532
1973	"	"	12,698	7,937
1974	"	"	11,429	7,143
1975	"	"	10,309	6,443
1976	5,500	3,500	13,189	8,393
1977	"	"	12,222	7,778
1978	"	"	11,224	7,143
1979	"	"	10,280	6,542
1980	"	"	9,338	5,942
1981	"	"	8,308	5,287
1982	"	"	7,493	4,768
1983	"	"	7,088	4,510
1984	"	"	6,782	4,316
1985	"	"	6,532	4,157
1986	7,500	"	8,552	3,991
1987	"	"	8,188	3,821
1988	"	"	7,870	3,673
1989	"	"	7,500	3,500
1990	"	"	7,156	3,340
1991	11,500	11,500-PA	10,388	10,388-PA
1992	12,500	12,500-PA	—	—
1993	13,500	13,500-PA	—	—
1994	14,500	14,500-PA	—	—
1995	15,500 <sup>a</sup>	15,500-PA	—	—

Source: Authors' compilation from standard references.

Note: PA = "pension adjustment." The PA is the sum of pension credits under DPSPs or RPPs. For money-purchase plans, this is simply the sum of employer and employee contributions. For defined-benefit plans an imputation is made.

<sup>a</sup>Indexed to average wage for subsequent years.

did not exceed the lesser of \$3,500 or 20 percent of earnings. These contribution limits were held constant, in nominal dollars, from 1976 to 1985 (inclusive). In 1986 the \$5,500 RRSP contribution ceiling was raised to \$7,500 and the \$3,500 limit on employee contributions to RPPs was removed. The \$7,500 limit remained in place from 1986 to 1990 inclusive. (See table 2.3 for a summary of these changing limits.)

A far-reaching reform of the RRSP/RPP system was first proposed in the February 1984 federal budget. The main elements of the reform would be an increase in contribution room for money-purchase plan RPPs to give them treatment equivalent to that of defined-benefit plans, improved portability of

plans, a phase-in of increased contribution limits to the lesser of \$15,500 or 18 percent of earnings (for all RPP plus RRSP contributions) by 1990, indexation of contribution limits to the average wage after 1990, and a carry-forward of unused contribution room to later tax years (now limited to seven years). These main elements remain in place in the reform, implemented in the 1991 tax year, but with several postponements of the reform, the real steady-state contribution limits will be smaller than originally anticipated, since they will hit \$15,500 in nominal terms in 1995, rather than 1990, and thereafter be indexed to the average wage.

In addition to setting out the history of nominal RRSP/RPP contribution limits, table 2.3 reports these numbers in constant 1989 dollars. Until 1991 there was a ratchet effect, with the real value increasing discretely from time to time, with the adjustments in nominal contribution limits, and declining between adjustments. Interestingly, real contribution limits were at their peak in 1972. This peak was almost regained in 1976, but by 1985 half the real value of the limits was gone. If moderate rates of inflation are experienced in the next four years, the \$15,500 limit of 1995 should approximately match the real 1972 or 1976 contribution limits. Thus, those who believe that high RRSP contribution limits were behind the historically high Canadian personal saving rates in the 1970s might expect a resurgence of saving in Canada in the 1990s.

#### 2.4.2 Portfolios and Withdrawals

An important aspect of the RRSP/RPP system is that there are restrictions on the portfolios that can be held. As elsewhere, the direction of investment of pension plan assets is closely regulated. One important feature of this regulation in Canada is that only up to 15 percent of the portfolio may be in foreign assets. On the RRSP side, there is a similar restriction on foreign investments. In addition, funds have largely been confined to investment in bonds, shares, mortgages, or life insurance policies. The May 1985 budget, however, introduced a number of features to encourage pension plans to invest in small business, and also allowed RRSPs to be invested in the shares of private Canadian corporations.

Individual control over portfolio composition is relatively rare under the institutional pension (RPP) component of the system but does occur under some money-purchase RPPs. In contrast, RRSP investors have great discretion over the type of assets they choose to hold via their choice of type of plan. Complete control can be achieved using a "self-directed" plan, under which the issuer (a bank or trust company) will adjust the portfolio whenever desired by the saver. Management fees for such plans are modest and they are becoming increasingly popular.<sup>18</sup> Self-administered plans are still chosen by a small minority of

18. For example, the Canadian Imperial Bank of Commerce currently offers self-directed mutual fund RRSPs with a \$25 annual management fee and a \$15 withdrawal fee. These fees are tax-deductible. The portfolio may be adjusted daily.



RRSP holders, however. In the non-self-administered category there are five basic types of plans: (1) "guaranteed" plans, providing a fixed rate of return, (2) "income" plans, with investments in fixed-income securities, (3) "equity" plans, invested in stocks, (4) "mortgage" plans, and (5) registered life insurance policies, under which the savings portion of the policy is treated as equivalent to an RRSP (now a less popular option than in earlier years). Due to increasing competition in the Canadian financial industries, rates of return on these various plans are now generally very attractive. A large variety of products are available, however, and savers must look closely at their fees and provisions. Routine advice is to select a plan without penalty, or with a low penalty, for early withdrawal or transfer of funds to another RRSP. Provided this advice is followed, the saver retains considerable flexibility and discretion in the choice of saving vehicle, even when the plan is not self-directed.

All funds in an RPP must be converted into an annuity before the taxpayer's seventy-first birthday. In contrast, great flexibility is allowed in cashing out an RRSP. First, taxpayers may withdraw all of the funds at any point and include them in taxable income that year. Second, they may purchase an annuity (possibly a joint-survivor annuity with spouses) prior to their seventy-first birthday. The annuity payments would enter taxable income, except for the first \$1,000, which would be eligible for the pension income deduction. Third, it is possible to transfer withdrawals from an RRSP to a registered retirement income fund (RRIF), where savings continue to accumulate tax-free, but a series of annual payments must be made from the fund, which will exhaust it by the taxpayer's ninety-first birthday.

Another important aspect is that part or all of an RRSP contribution may actually be made to a spouse's RRSP. This allows an element of income splitting—and not just in retirement, since the amount contributed to the spouse's RRSP may be withdrawn after just two years, being treated as the spouse's income.

The most recent modification of RRSP withdrawal options was the introduction in the February 1992 federal budget of a home buyers' plan, under which up to \$20,000 could be withdrawn tax-free from an RRSP in order to buy a house. A couple could therefore withdraw up to \$40,000 for this purpose. The \$40,000 would have to be restored to the RRSPs over the next 15 years, but the net effect would be a transfer of equity from the RRSP to the home. This plan will of course strengthen the incentive to save via an RRSP for many people, as well as having an effect on portfolio composition.

#### 2.4.3 Participation in RPPs and Use of RRSPs

##### *Flows*

Tables 2.4 and 2.5 present summary information on the incidence of employee RPP and RRSP contributions and the amounts contributed in 1981 and 1989, by age and income groups, respectively. These data come from unpub-

**Table 2.4 RRSP and RPP Contributors and Contributions, by Age Group**

Age	1981			1989		
	RPP	RRSP	RPP or RRSP	RPP	RRSP	RPP or RRSP
<i>% of C/QPP Contributors Contributing</i>						
<25	18	3	19	14	9	21
25-34	43	13	49	37	26	53
35-44	51	20	58	50	36	68
45-54	51	29	62	52	44	74
55-64	56	36	68	47	60	83
Total	42	17	49	40	34	60
<i>Average Amount per Contributor (1989 \$)</i>						
<25	554	1,220	701	691	1,463	1,151
25-34	898	1,489	1,211	1,212	2,032	1,887
35-44	1,153	1,761	1,644	1,666	2,479	2,510
45-54	1,139	1,991	1,893	1,808	2,700	2,832
55-64	1,056	2,074	1,992	1,571	3,616	3,515
Total	994	1,836	1,551	1,498	2,830	2,644

Source: Unpublished tabulations, Department of Finance, Government of Canada.

Note: C/QPP stands for the Canada and Quebec Pension Plans. Among those of working age, the group of contributors to these plans corresponds closely to the set of individuals who are eligible to make RRSP or RPP contributions.

lished Department of Finance compilations. Tables 2.6 and 2.7 supplement this flow data with information on the stock of RRSP wealth held by families in 1984, according to Statistics Canada's Survey of Consumer Finance (SCF).

Table 2.4 shows the fraction of contributors to the Canada and Quebec Pension Plans (C/QPP) who also contributed to RPPs, RRSPs, or either type of plan, as well as amounts contributed, by age group.<sup>19</sup> Note, first, that the incidence of both RPP and RRSP contributions rises with age, but does so more steadily for RRSPs. There is a plateau of about 50 percent contributing to RPPs from age 35 to age 64. In contrast, the *amount* contributed to an RPP has a hump-shaped profile, with the maximum contribution occurring in the 35-44-year-old group in 1981 and in the 45-54-year-old group in 1989. The incidence pattern of RPP contributions did not change very much from 1981 to 1989, but the average contribution rose by 51 percent, with the rise being especially marked for older groups.

In contrast to RPPs, the incidence, as well as average amount, of RRSP contributions increased dramatically in the 1980s—in part reflecting the disappearance and curtailment of many other tax shelters. While in 1981 only 17

19. It is useful to divide by the number of C/QPP subscribers since they approximate closely the set of eligible RRSP/RPP contributors in the working-age group. Many retirees who are not C/QPP subscribers make RRSP contributions, however. This results in some instances in table 2.5 where the figures for RRSP/RPP contributors as a percentage of C/QPP subscribers exceed 100 percent.

**Table 2.5 RRSP and RPP Contributors and Contributions, by Income Group**

Income (thousand \$)	1981			1989		
	RPP	RRSP	RPP or RRSP	RPP	RRSP	RPP or RRSP
<i>% of C/QPP Contributors Contributing</i>						
0-10	5	2	7	7	6	13
10-20	19	7	25	19	20	36
20-30	48	14	55	47	35	69
30-40	64	23	71	66	47	86
40-50	75	32	82	71	56	92
50-60	82	47	90	70	58	98
60-70	75	51	87	65	62	102 <sup>a</sup>
70-80	73	61	88	59	66	101 <sup>a</sup>
80-90	62	60	93	52	70	103 <sup>a</sup>
90-100	53	65	90	46	74	104 <sup>a</sup>
>100	39	71	91	28	83	101 <sup>a</sup>
Total	42	17	49	40	34	60
<i>Average Amount per Contributor (1989 \$)</i>						
0-10	197	455	275	200	911	614
10-20	376	979	602	490	1,634	1,264
20-30	652	1,247	915	954	2,225	1,865
30-40	960	1,600	1,400	1,490	2,646	2,586
40-50	1,272	1,907	1,917	2,032	2,897	3,235
50-60	1,553	2,042	2,420	2,582	3,539	3,868
60-70	1,907	2,355	2,923	2,866	4,455	4,541
70-80	1,964	2,682	3,321	3,074	5,056	5,084
80-90	2,042	3,087	3,324	3,307	5,820	5,674
90-100	2,103	3,510	3,727	3,659	6,343	6,218
>100	2,136	4,281	4,254	3,571	7,288	7,032
Total	994	1,836	1,551	1,498	2,830	2,644

Source: Unpublished tabulations, Department of Finance, Government of Canada.

<sup>a</sup>See n. 19.

percent of the C/QPP population contributed to RRSPs, by 1989 this fraction had doubled to 34 percent. Amounts contributed also increased sharply (54 percent overall), with the biggest increases again coming for older groups. The relative increase in contributions by older groups likely reflects, in part, their increasing relative prosperity. It also reflects the fact that the rise in the RRSP contribution limit from \$5,500 to \$7,500 in 1986 would not benefit workers who earned less than \$27,500 (since for them the effective limit was 20 percent of earnings). Such lower-income workers are of course more heavily represented among the young than the middle-aged.

Table 2.5 looks at the pattern of RRSP/RPP contributions by income group. The incidence of RPP contributions has a hump-shaped profile as one moves up the income groups, with the largest incidence occurring in the \$40,000-\$60,000 range. High-income taxpayers are more likely to be independent pro-

professionals and businesspeople and therefore not covered by employer/union pension plans. The incidence of RRSP contributions, in contrast, climbs with income throughout.

One interesting change in the 1980s, indicated by table 2.5, is that the incidence of RPP contributions rose slightly in the lower-income groups and fell in all the groups with incomes of \$40,000+. The incidence of RRSP contributions, in contrast, rose in all income groups. While overall RRSP contributions went up on average by 54 percent, there was little change in the relative size of contributions across the income groups. On the other hand, the relative contributions of high-income contributors to RPPs increased from 1981 to 1989, likely reflecting the removal of the \$3,500 limit on employee RPP contributions in 1986.

In conclusion, amounts contributed to both RPPs and RRSPs rose substantially both in aggregate and per contributor. The pattern of incidence did not change radically for RPPs, but the incidence of RRSP contributions doubled overall, and rose for all age and income groups. Older contributors had the largest increase in RRSP contributions, while the highest-income groups had the biggest increases in RPP contributions per contributor. These changes seem to be adequately explained by a general increase in the desire to use the RPP/RRSP saving vehicles due to the curtailment of other shelters pushing against the limits set by the incidence of employer/union-based pension plans, and the changing constraints on employee RPP and RRSP contributions.

While most RPP contributions will stay "locked-in" until retirement, people may withdraw RRSP funds at any point, and each year there is a significant flow of preretirement withdrawals. When attempting to get an idea of the extent of net asset accumulation in this form, it is important to take into account these withdrawals. Unpublished tabulations from the Department of Finance indicate that aggregate withdrawals as a percentage of contributions for taxpayers aged less than 60 years were 16.7, 21.4, and 19.2 percent in 1981, 1982, and 1984, respectively. The age profile shows a strong negative relation between withdrawals and age from age 25 to age 60. (Withdrawal rates rose until age 25 and again after age 60.) In the recession years, 1981 and 1982, withdrawals were 30 percent of contributions for those aged 25–34. However, in 1984, which was perhaps more "normal," withdrawals were just 21.6 percent in this age group, and the relationship between age and withdrawals was overall much flatter than in the recession years.

It would be interesting to look at more recent information on RRSP withdrawals for those of working age, especially in view of the curtailment of several alternative tax shelters since 1984. Nevertheless, one may provisionally conclude that withdrawals average about 15–20 percent of contributions for those of working age. This conclusion is used to help with some rough calculations (below) of the stock of RRSP wealth which people would build up at various ages if they continued to contribute at recently observed rates.

**Table 2.6 RRSP Ownership by Age and Income, Families and Unattached Individuals, 1984 SCF**

	Incidence (%)	Mean Amount (\$)	% of Assets	% of Financial Assets	Mean Net Worth (\$)
<b>Age</b>					
<25	10.6	230	1.6	9.4	9,104
25-34	27.2	1,683	2.8	19.3	42,845
35-44	34.1	3,636	3.4	23.6	85,775
45-54	42.8	7,110	5.0	25.5	128,411
55-64	43.8	8,214	5.7	21.3	136,904
>65	15.6	2,562	2.7	7.6	93,468
<b>Income (thousand \$)</b>					
<5	3.9	260	0.9	5.8	24,028
5-10	3.5	220	0.8	3.7	25,238
10-15	10.3	810	1.6	6.8	45,891
15-25	22.7	1,780	2.5	10.9	63,396
25-35	35.1	2,920	3.3	16.8	74,807
35-45	45.3	5,070	4.5	24.3	94,328
45-60	54.9	7,490	4.9	22.6	130,450
>60	70.9	18,730	5.8	23.0	293,468
Total	30.2	3,900	4.0	18.2	85,344

Source: Cols. 1, 3, and 5 are taken directly from Statistics Canada, *The Distribution of Wealth in Canada, 1984*, Publication no. 13-580 (Ottawa, 1986), 64-73, tables 24-27; cols. 2 and 4 were calculated by the authors from these tables.

### Stocks

As discussed earlier, Statistics Canada has conducted wealth surveys at roughly seven-year intervals as part of its annual Survey of Consumer Finance (SCF). Amounts held in RRSPs, but not in RPPs, are surveyed. Unfortunately, the most recent survey was conducted in 1984, so that this data source is now somewhat dated. However, the results of the survey appear to check out fairly well with independent information. They are summarized here in table 2.6.

Table 2.6 shows the incidence of, and average amounts held in, RRSPs by age and income groups for families and unattached individuals in spring 1984. On average, overall, just \$3,900 was held in this form, which is only 4.6 percent of a mean net worth of \$85,344. For comparison, this amount is comparable to the value of cars and trucks (5.3 percent of net worth), but is just 12 percent of equity in owner-occupied houses. As a fraction of overall financial assets, RRSPs were 18 percent—up considerably from the 1977 SCF (see figs. 2.5 and 2.6.)

The amounts held in the form of RRSPs, according to the 1984 SCF, are fairly modest. It should be borne in mind, however, that RPPs are likely to be about twice as great as RRSPs in value. On this basis, the combined RRSP/

Table 2.7 Simulated "Steady-State" Sheltered Saving Stocks (1989 \$)

Age	1981			1986			1989		
	RPP	RRSP	Total	RPP	RRSP	Total	RPP	RRSP	Total
25	646	119	765	502	317	819	531	458	989
30	3,455	882	4,337	3,586	1,942	5,528	3,676	2,653	6,329
35	7,039	1,855	8,895	7,523	4,015	11,538	7,691	5,454	13,144
40	12,917	3,701	16,618	14,713	7,839	22,553	15,343	10,449	25,793
45	20,419	6,056	26,475	23,890	12,720	36,610	25,110	16,826	41,936
50	29,944	9,920	39,864	35,374	19,755	55,130	38,184	26,032	64,216
55	42,101	14,851	56,952	50,032	28,735	78,766	54,869	37,781	92,651
60	56,272	20,790	77,062	67,039	41,053	108,092	73,433	54,094	127,527
65	74,359	28,370	102,729	88,746	56,775	145,521	97,125	74,913	172,038

Source: Authors' own calculations. See text.

RPP wealth of the 1984 SCF sample would be about 15 percent of their net worth, which is considerably more impressive.

In terms of patterns across age and income groups, note first that the qualitative patterns picked up for *contributions* are echoed for stocks. The incidence of RRSP ownership rises with both age and income. The relative importance of RRSPs in the portfolio also tends to rise with both age and income.

Another way of getting an idea about stocks of sheltered retirement saving is to do a perpetual inventory calculation based on flows. In order to get an actual estimate of RRSP/RPP ownership in a particular year, one would want to have a complete time series of contributions by age. In fact, what we have is data for just three years: 1981, 1986, and 1989. What we have done, therefore, is to compute three alternative "steady-state" age profiles of RRSP/RPP stocks which would be obtained if the contribution patterns from the three different years had remained in place (in real terms) forever. A 5 percent real rate of return (conservative in light of real interest rates in the 1980s in Canada) and a 15 percent withdrawal rate at all ages have been assumed.<sup>20</sup> It is also assumed that employer and employee RPP contributions were equal.

The most striking thing about the steady-state calculations presented in table 2.7 is that the amounts built up in RRSPs and RPPs are much larger than one would expect on the basis of the survey evidence. In 1989 dollars, the RRSP balances at age 60 are \$20,790, \$41,053, and \$54,094, using the 1981, 1986 and 1989 data, respectively. These figures, which are for individual taxpayers, compare with mean *family* holdings (converted to 1989 dollars) of just \$10,121 in 1984 according to the SCF. Part of the explanation for the difference is that because RRSP contributions have been trending up over time, the *steady-state*

20. The results are relatively insensitive to the assumed withdrawal rate, as long as it is kept in the plausible range of 10–20 percent. Results are more sensitive to the interest rate. If the real rate of return was only 3 percent (more representative of the 1960s and early 1970s than the 5 percent rate used in the calculations), RRSP accumulation at age 60 would be about one-third smaller.

stocks implied by any year's contributions will naturally exceed current stocks. However, some part of the explanation may lie in survey underestimation of RRSP holdings.

#### 2.4.4 Social Security<sup>21</sup>

The earnings-related component of social security is much less important in Canada than in the United States. The three principal federal programs are Old-Age Security (OAS; its budget for the 1989–90 fiscal year was \$11.8 billion), the Guaranteed Income Supplement (GIS; \$3.9 billion) and the Canada Pension Plan (CPP; 1990 expenditures were \$9.5 billion).<sup>22</sup> In addition, several provinces provide means-tested payments to the elderly, and many of the provinces and their municipalities provide transfers in the form of subsidized services (medical care, homes for the aged, and so on).

Old-Age Security is payable to all who are age 65 or older and who meet certain residency requirements. As of January 1, 1991, the maximum pension was \$354.92 per month, or \$4,259 per annum. It has been indexed quarterly to the consumer price index (CPI) since April 1, 1973. Old-Age Security benefits are taxable under the Income Tax Act and are also subject to the social benefits repayment tax introduced in 1987, which taxes back OAS payments at a rate of 15 percent on an individual's net income in excess of a threshold which is partially indexed and stood at \$51,765 in 1991.

Guaranteed Income Supplement is an income-tested supplement payable to OAS recipients. As of January 1, 1991, the maximum GIS was \$421.79 per month for a single pensioner and \$211.93 for each member of a married couple, both of whom had to be at least 65 years old. Thus OAS and GIS together guarantee elderly married couples an income of \$15,111.60 per annum. However, the "tax-back rate" for GIS is 50 percent on income over and above GIS and OAS.<sup>23</sup>

Canada Pension Plan is a compulsory, contributory pension plan which pays benefits in a variety of circumstances and which requires those working to make certain contributions. Retirement pensions are based on each individual's earnings history. They are designed to replace 25 percent of earnings at age 65, up to the average industrial wage which stood at \$30,500 in 1991.<sup>24</sup> Benefits are indexed to the CPI and are taxable. In 1991, employers and employees each contributed 2.3 percent of earnings between \$3000 and \$30,500 to cover the costs of the program. Since CPP's inception (in 1966) revenues have exceeded

21. This section draws heavily on various issues of the Canadian Tax Foundation's annual publication, *The National Finances*, as well as on Burbidge (1987).

22. Quebec operates its own public pension program, QPP.

23. The equivalent of OAS/GIS for persons aged 60–64 years is "spouse's allowance," which has a tax-back rate of 75 percent on the OAS component.

24. Contributors may choose to collect retirement benefits at any age between 60 and 70. The pension is reduced 0.5 percent per month before age 65, and increased 0.5 percent per month after. Thus someone retiring at age 60 collects 70 percent of the age-65 retirement pension (130 percent for someone aged 70).

**Table 2.8** Components of Pretax Income for Urban, Married-Couple Families with Husband Retired: 1977, 1984, and 1989 SCFs (1990 \$)

	Income Year					
	1976		1983		1989	
	Weighted Means	Income Shares (%)	Weighted Means	Income Shares (%)	Weighted Means	Income Shares (%)
Earnings	5,000	20.9	4,692	16.5	6,532	17.7
Investment income	4,474	18.7	5,780	20.3	6,943	18.8
OAS and GIS	7,346	30.7	7,889	27.7	7,825	21.2
C/QPP	1,866	7.8	3,803	13.4	5,803	15.7
Pensions and annuities	4,358	18.2	4,507	15.8	8,013	21.7
Other income	902	3.7	1,770	6.3	1,781	4.9
Total income	23,946	100	28,441	100	36,897	100
No. of observations	364		534		1,468	
Average age	70.2		69.8		69.7	

Source: Authors' calculations using Statistics Canada's SCF public-use microdata tape.

expenditures and the surplus has been loaned to the provinces at below-market interest rates.<sup>25</sup> These surpluses are scheduled to fall so that CPP will become more like a pure pay-as-you-go program.

Table 2.8 uses the 1977, 1984, and 1989 SCFs to give some idea of the relative importance of different sources of income for elderly, urban, married-couple families in which the husband is "retired" and is at least 65 years old.<sup>26</sup> "Earnings" may arise from the activities of the wife in the labor market or from the self-employment income of the family (e.g., renting a room to a boarder). "Investment income" includes interest, dividends, and realized capital gains, but not the annuity income originating from having turned an RRSP into a retirement annuity. Unfortunately, SCF data do not permit one to isolate retirement income resulting from RRSPs; all such income is included with private pension income in "pensions and annuities." "Other income" includes the provincial supplements such as Ontario's Guaranteed Annual Income Supplement (currently \$83 per month with a 50 percent tax-back rate).

Table 2.8 makes some important points: First, even though for all age groups together average real income was fairly constant from 1975 to 1990, mean income of *retired couples* increased by 50 percent. Second, the combination OAS/GIS has declined sharply in importance, while the share of C/QPP has doubled from 7.8 to 15.7 percent. Third, by 1989, "pensions and annuities"

25. The accumulated surplus stood at \$39 billion in 1990.

26. The 1990 SCF has been released by Statistics Canada, but at the time this paper was being prepared, it had not been installed at our universities.



had become the most important component of retirement income. Fourth, the share of "investment income" was virtually unchanged at 18.8 percent between 1976 and 1989; that its share was a little higher in 1983 may reflect the high interest rates during the early 1980s.

What can we say about "replacement rates"? First, since the OAS/GIS safety net guarantees elderly, married couples an income over \$15,000 per year, low-income workers likely experience an increase in after-tax income on retirement. Second, for middle-income workers earning less than the average industrial wage, the replacement rate built into CPP is 25 percent; this sets a lower bound because such workers would still receive at least OAS if not some GIS. Many defined-benefit private pension plans integrate CPP with the private pension and pay about 65 percent of final earnings, so for some workers, replacement rates on private and public pensions alone could exceed 70 percent. Finally, for higher-income workers, private arrangements dominate the public system; depending on RRSP wealth and for some private pensions, replacement rates could once again exceed 70 percent.

Various calculations of replacement rates have been made by students of pensions in Canada. The most comprehensive appears to have been by Wolfson (1979), who simulated the lifetime consequences of OAS, GIS, and C/QPP. In line with our above suggestion, Wolfson found that, looking at the impact of compulsory programs alone, "for the poorest 10 or 20% of the population, average post-retirement consumption levels could well exceed average pre-retirement consumption levels. For the upper 50 or 70% of the population, however, average post-retirement consumption levels could well be 25–50% below corresponding pre-retirement levels if no other provisions for retirement are made" (Wolfson 1979, 5–38).

To say more about actual replacement rates, it would be exceedingly helpful to have panel data that followed individuals through the retirement period. Unfortunately, such data are not publicly available for Canada.<sup>27</sup> Since earnings were so stable, at least over the 1980s, one may be able to build on table 2.8 by comparing the after-tax incomes of the families included in table 2.8 with the after-tax incomes of "similar" families where the head is aged 55–64. We use head's education as an extra control to achieve better comparability between the working and the retired samples.

We present the results of this exercise in table 2.9. As one might expect, before-tax and after-tax family income rise with the husband's education level. It is also not surprising that replacement rates are higher for after-tax income than for before-tax income. What is striking is how little replacement rates vary with education level. Using after-tax income, the replacement rate for

27. The Department of Finance has several longitudinal files of taxpayers which are used in-house. Those data could be used to study actual replacement rates, but we are not aware of any studies that have been done.

**Table 2.9**                      **Weighted Means and Replacement Rates of Before-Tax (BT) and After-Tax (AT) Income for Urban, Married-Couple Families, by Selected Education Groups: 1989 SCF (1990 \$)**

Education Level of Husband	Working Aged 55-64		Retired Aged 65-75		Replacement Rates (%)	
	BT Income	AT Income	BT Income	AT Income	BT Income	AT Income
Less than high school	62,211	49,689	31,513	28,710	51	58
High school	72,964	57,994	40,722	35,758	56	62
University degree	103,953	76,517	60,005	49,481	58	65
All groups	72,034	56,229	36,897	32,864	51	58
No. of observations	1,193		1,468			

*Source:* Authors' calculations using Statistics Canada's SCF public-use microdata tape.

those with less than a high school education is 58 percent, and that for the university-degree group is 65 percent.

## 2.5 Evidence of Impacts

### 2.5.1 Revenue Impacts

The revenue impacts of government incentives for saving in Canada have been most carefully studied by the Department of Finance in its preparation of tax expenditure accounts in 1979, 1980, and 1985.<sup>28</sup> The relevant results of the 1985 exercise are set out in table 2.10. We see that the total federal revenue impact of the seven measures listed equaled \$7,130 million, or 26.6 percent of actual federal revenues. Impacts on provincial government revenues were not estimated but would have been about 50 percent of this total, so that the aggregate loss of revenue would be about \$11 billion, or 3 percent of personal income.

It is clear from table 2.10 that the value of the RRSP/RPP incentive dwarfs the others. The revenue loss from RRSPs/RPPs makes up 69 percent of the total from the seven measures listed. Next in order of importance come the \$1,000 investment income deduction (abolished in 1987), the dividend tax credit (since, cut back considerably), exemption of investment income accruing under life insurance policies (terminated for new policies in 1982), the \$1,000 pension income deduction, and the oil, gas, and mining incentives.

There has been so much change in the Canadian tax system that the figures

28. Currently, an updated version of these calculations is being performed, but results are not yet available.

Table 2.10 Revenue Impacts of Tax Incentives for Saving, Canada: 1983

Incentive	Amount (million \$)	% of Federal Revenue
RRSPs/RPPs	4,900	18.3
Investment income deduction	835	3.1
Dividend tax credit	785	2.9
Life insurance	290	1.1
Pension income deduction	150	0.6
RHOSPs <sup>a</sup>	125	0.5
Oil, gas, and mining	45	0.2
Total	7,130	26.6

Sources: Col. 1, Department of Finance, *Account of the Cost of Selective Tax Measures* (Ottawa, 1985), 39–48, table 1; col. 2 equals col. 1 divided by total federal PIT revenue in 1983, which equaled \$26,809 million.

<sup>a</sup>Registered Home Ownership Savings Plans.

in table 2.10 do not provide a guide to the current revenue impacts of incentives for saving. However, some fairly shrewd guesses can be made about the magnitude of the current shelters. Those shown in table 2.10 that have since disappeared provided benefits equal to 4.7 percent of federal revenue. The only new shelter to be added is the \$100,000 lifetime capital gains exemption. Even if this sheltered capital gains fully it would not reduce revenue by anything like the amount accounted for by RRSPs/RPPs. An educated guess is that the revenue loss due to this new shelter is likely to be less than 2 percent of total federal revenue.<sup>29</sup> Finally, RRSP/RPP contributions have increased sizably since 1983—by about two-thirds by 1989, for example, whereas PIT revenue rose only 46.6 percent in real terms. But by 1995, RRSP contribution limits will have almost doubled relative to 1989, so that in the new steady state that is being approached, the RRSP/RPP shelter could well expand 40–50 percent compared to its relative size in 1983. This would imply total revenue losses equal to 25–30 percent of federal revenue. Adding up, when the new RRSP/RPP system is completely phased in, it appears that the total revenue impact of personal savings incentives might be in the neighborhood of 30–35 percent of federal revenue, that is considerably higher than the 26.6 percent figure for 1983 in table 2.10.

### 2.5.2 Savings Impacts

As in other countries, there has been much interest in the impact of taxation on saving in Canada. Renewed interest in this question was stimulated in the United States by Boskin (1978), who found that, in contrast to earlier studies,

29. The 1985 tax expenditure accounts estimated that the half-taxation of capital gains reduced revenue by \$440 million. If the revenue from capital gains taxation was in the same neighborhood, as seems reasonable, it would add up to about 1.6 percent of federal revenue.

there was a fairly large interest elasticity of aggregate saving. Boskin's best-known estimate of this number was 0.4. West (1987) replicated Boskin's study for Canada, but found that the interest rate effect on saving was negative and insignificant. He also replicated the approach of Summers (1982), based explicitly on the life-cycle model, and again found either zero or negative effects. Positive effects were only obtained when the nominal interest rate was used instead of the real rate. Beach, Boadway, and Bruce confirmed these results using alternative real interest rate variables (see Beach et al. 1988, 31–34). Beach et al. suggested that the divergence in U.S. and Canadian results could be explained by the upward trend in the generosity of Canadian tax incentives for saving in the 1960s and 1970s. Real interest rates declined in both the United States and Canada, but the impact one would otherwise expect on saving was reversed in Canada by the missing tax incentives variable, it was suggested.

There has been a great deal of discussion in the United States about whether IRAs stimulate saving or are simply inframarginal. Curiously, this issue has received much less attention in Canada, where RRSPs are relatively more important.

Since very few people are observed to save *only* in the form of an IRA or RRSP, simple economic analysis would suggest that most IRA/RRSP saving is inframarginal. From this viewpoint, IRAs/RRSPs just represent a rationed reduction in the price of retirement consumption. An increase in contribution limits may have only wealth effects, and no substitution effects.

There are important critics of this position. They point out, for example, that many people who contribute less than the IRA/RRSP limit also save in nonsheltered forms, suggesting that the two forms of saving are not perfect substitutes. Why aren't they perfectly substitutable? Clearly, the transactions costs of opening and closing IRAs/RRSPs may differ from those of other saving vehicles. Also, it has been argued, the high advertising of IRAs/RRSPs may help to make them a distinct commodity in many people's eyes. It is difficult to evaluate such arguments *a priori*. The question of whether IRAs/RRSPs stimulate fresh saving is really an empirical issue.

There are three pieces of evidence on the impact of RRSPs on saving in Canada: simulations by Michael Daly and colleagues, studies done using in-house Department of Finance data sets by David Wise, and the well-known Carroll and Summers (1987) study.

In the early 1980s, some Canadian researchers became interested in the properties of a tax system where both registered retirement savings vehicles and nonregistered but tax-exempt savings were present. Daly (1981) and Hood (1982) both showed that, under certainty and with perfect capital markets, in the absence of contribution limits such a system would allow ideal lifetime tax averaging, and would effectively convert the personal tax base from annual to lifetime income. Androkovich, Daly, and Naqib (1993) follow this up with a simulation of the effects of introducing unlimited RRSPs in a stylized repre-

sentation of the Canadian tax system. They find that there is a very sizable effect on capital accumulation—in fact a greater effect than would be obtained via a progressive annual consumption tax.

While we believe that tax policy simulations are interesting, in the present context they seem to beg the question. (Simulated households behave according to the simple economics we outlined to start with. Real households apparently do not all do so.) Also, individual or household-specific effects, and variations in preferences, may be important. Thus serious empirical work, as well as simulation, is required.

In cooperation with Steven Venti and Anil Gupta, David Wise has conducted a series of studies for the Department of Finance since 1984. These have been motivated by a desire to predict the effects of the comprehensive RRSP/RPP reform which was originally projected in 1984 and has now been implemented (see the previous section). Attention in these studies has focused on the impact of higher contribution limits, and carry-forwards of unused contribution room, on taxpayers' likelihood of contributing and on their size of contribution. The effect on total saving has not been modeled explicitly.

The Venti and Wise approach is well known, and its features will not be detailed here (see Venti and Wise [1990], as well as the critical treatment in Gravelle [1991]). Rather we will confine ourselves to noting some of the quantitative results that Wise et al. have found for Canada. Wise (1984, 79) concluded that a 57 percent increase in limits would cause a 28 percent rise in contributions, neglecting the possible impact of increased contribution limits on the number of contributors.<sup>30</sup> Gupta, Venti, and Wise (1992, 32) estimate that the seven-year carry-forward provision of the new RRSP arrangements "will raise average contributions by 60 to 70 percent in the long run, with a peak increase of almost 100 percent occurring six or seven years after the introduction of the program."

Carroll and Summers (1987) compared savings rates in Canada and the United States from 1961 to 1985. The authors try to explain why the Canadian and U.S. savings rates, after being similar for many years, diverged in the mid-1970s. One of their independent variables is RRSP contributions. This variable was statistically significant in explaining part of the difference in savings rates between the two countries, although the variable was not significant in a stand-alone regression for the United States. It would be interesting to see the results of a repetition of the study after a few more years, given the current phasing-in of higher RRSP limits in Canada versus the post-1986 curtailment of IRAs in the United States.

30. Wise (1984) simulates the impact of alternative schemes for changing contribution limits. No convenient summary measure indicating the degree of sensitivity of contributions to changes in the limits is provided by these experiments, however. The numbers quoted here come from a simpler experiment: indexing contribution limits between 1979 and 1985 to offset the 57 percent increase in prices over this interval.

## 2.6 Conclusion

This paper has examined the evolution of tax incentives for saving in Canada, particularly tax-deferred retirement saving plans, over the period 1970–91. From 1970 until about 1981, these incentives increased both in number and, broadly speaking, in generosity. Subsequently, incentives were for the most part cut back. Finally, a new phase began in 1991 with the gradual introduction of considerably higher contribution limits and other liberal features in the RRSP/RPP system.

An interesting result of this paper is the identification of a strong gross correlation between tax incentives for saving and the personal saving rate. The latter peaked in 1982 and displayed a hump-shaped time profile over the 1970–90 period, matching the rise and fall of tax incentives very closely. In contrast, real interest rates, which one might have expected to lie behind the saving trends, behaved quite differently over the two decades. They fell until 1975 and then began an upward trend to 1990. A tentative conclusion is that the effects of tax incentives were much stronger than those of real interest rates over this period. Careful empirical work would be required to properly assess this conclusion.

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