EVALUATION REPORT
PHASE I OF THE EVALUATION OF THE
CANADA PENSION PLAN (CPP)

Evaluation and Data Development
Strategic Policy
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Executive Summary

1.0 INTRODUCTION

This report is an executive summary of the findings and conclusions of Phase I of the evaluation of the Canada Pension Plan (CPP), namely of the CPP retirement pension component and its funding mechanism. The Terms of Reference for this Phase I evaluation were approved by the Audit and Evaluation Committee of Health and Welfare Canada on January 16, 1993.

1.1 BACKGROUND

The CPP provides contributors and their families with a basic level of protection against the loss of earnings due to retirement, disability or death of a contributor to the Plan. CPP benefits were designed to provide a basic level of earnings replacement in retirement, to be supplemented by income from other sources. The specific objective was to replace gross earnings equal to 25% of average career earnings up to a ceiling, the Year's Maximum Pensionable Earnings (YMPE), which approximates the average industrial wage. The CPP is part of a package of federal programs which also includes Old Age Security (OAS), the Guaranteed Income Supplement (GIS) and Spousal Allowance (SPA), an age-related tax credit and pension credit, as well as provincial/territorial income support programs targeted to the elderly. The CPP, and the Quebec Pension Plan (QPP) which is similar to the CPP, are earnings-related, contributory, mandatory, publicly administered programs. The CPP was intended to be self-supporting, with all CPP benefits paid from the contributions of employees and employers and from the investment earnings of the CPP Fund.

About 9.6 million people contributed to the CPP in 1991 with another 3.1 million contributing to the QPP. Total contributions to the CPP in 1991 were $8.1 billion, almost 10 times the total in 1971. The number of CPP retirement pension beneficiaries increased from about 187 thousand in 1971 to just under 1.9 million in 1991, by about 10 times, while the value of these retirement benefits increased from about $57 million in 1971 to approximately $7.6 billion in 1991. Data for 1993 reveals that the number of beneficiaries from CPP retirement pensions had risen to just under 2.1 million with payments rising to just under $9.2 billion.

1.2 SCOPE OF THE EVALUATION

The evaluation questions addressed in this evaluation were as follows:

✔ Is a compulsory and contributory CPP still warranted in the system of public and private pensions?

✔ What proportion of gross and net income of retirees comes from CPP?

✔ What earnings replacement rates are provided by CPP retirement pensions alone, and by the public pension system as a whole?

✔ Do projected future increases in contribution rates and benefit payouts threaten the affordability of the CPP in its current form?

✔ Do demographic and labour market concerns about the future argue for changing the manner in which the CPP is funded?

✔ Does the CPP Fund fulfil its intended role? Is it important or desirable for the CPP Fund to maximize interest income in the same manner as private pension funds?

✔ Are inter-generational transfers through the CPP justifiable?

✔ What messages need to be sent to Canadians about the role and viability of the CPP?

The evaluation looks at the CPP retirement pension not just in isolation but also as a component of the tax-expenditure system impacting on seniors.

2.0 FINDINGS

The findings of this phase of the CPP evaluation are summarized under each evaluation question and issue category: program rationale, objective achievement, cost-effectiveness and knowledge of the CPP. A separate evaluation report provides a more detailed summary of the analysis by evaluation issue.

2.1 PROGRAM RATIONALE

Question: Is a compulsory and contributory CPP still warranted in the system of public and private pensions?

There is a lack of private sector pension coverage particularly among lower-earning workers. Only 49% of paid workers aged 20 through 64 were covered by employer-sponsored registered pension plans (RPPs) in 1989. But there were big differences by firm size, earnings level, age and gender, and between the public and private sector:

✔ 54% of men and 42% of women were covered by an RPP in 1989, but only 24% of part-time workers were covered;

✔ 73% of public sector workers were covered, but only 39% of workers in the private sector;

✔ less than 15% of workers in firms employing less than 20 people were covered, but 72% in firms employing 500 or more; and

✔ coverage was 82% for those with earnings between $40,000 and $60,000 but only 27% for those earning less than $20,000.

As with RPPs, the data for registered retirement savings plans (RRSPs) show that the private pension programs are more important for higher income workers. About 75% of tax-filers in the $20-29,999 income range in 1991 contributed to C/QPP compared with 23% and 29% to RPPs and RRSPs respectively; 62% of tax-filers in the $10,000-19,999 income range were C/QPP contributors compared with 9% and 17% for RPPs and RRSPs respectively, in 1991. Lower-income seniors rely much more on the public pension system (CPP, OAS/GIS) for their retirement income. RPPs and RRSPs were not expected to meet the needs of lowest income seniors.

The expectation that private employer-sponsored coverage (RPPs) and RRSPs would adequately supplement C/QPP benefits has not been fulfilled for many workers. Changes in the labour market such as more part-time workers, more job turnover, more self-employed workers have also contributed to the less than adequate work related pension coverage.

These developments with regard to private pension vehicles and the integration of CPP into most RPPs provide compelling evidence that a compulsory and publicly-operated CPP is necessary and desirable. The CPP is a complementary part of any public/private national seniors benefit program comprised of voluntary private pension components (RPPs, RRSPs), the OAS, the income-tested Guaranteed Income Supplement (GIS) and complementary provincial programs.

2.2 OBJECTIVE ACHIEVEMENT

Question: What proportion of gross and net income of retirees comes from the CPP?

2.2.1 The C/QPP as an Income

Source

The proportion of senior single men and women, and couples, with income from the C/QPP rose significantly over the decade 1981-91 as the C/QPP matured, but significant differences remain for sub-groups of the senior population.

About 80% of single senior men and 68% of single senior women in 1991 received C/QPP, compared with 64% and 40% respectively, in 1981. In 1991 about 90% of couples with both partners at least 65 years of age received C/QPP benefits (up from some 78% in 1981). Lowest-income seniors below the Statistics Canada 1986-based Low-Income Cut-Offs (LICOs) are less likely to be in receipt of a C/QPP pension than those with higher incomes. About 64% of senior single men, 43% of senior single women and 68% of senior couples under the LICOs received a CPP pension in 1989.

2.2.2 Composition of Gross Income

CPP is making an increasingly important contribution to seniors income:

✔ C/QPP payments represented 18%, 15% and 17% of the gross income of single senior men, women and couples, respectively, in 1991. The percentage point increase in the share of C/QPP over the 1981-91 decade was about the same for all three groups (about 7 percentage points).

✔ The share of gross income coming from the C/QPP was approximately 19% for the lowest-income single senior men, 12% for lowest-income single senior women, and 13% for lowest-income couples with gross income under the LICOs in 1989[1].

✔ OAS/GIS provided 31% and 39% of the total income in 1991 for single men and women, respectively. This compared with about 29% of the gross income of couples. This was a 2 to 4 percentage point decrease in shares for these groups from 1981.

✔ Private pension accounted for 14% of the gross income of single senior women, and 20% of the gross income for single senior men or senior couples in 1991; the percentage point increase in the share of private pensions over the 1981-91 decade was about the same for single men and women, about 5 percentage points, and about 9 percentage points for couples.

✔ The share of investment income decreased over the 1981-1991 decade; it represented 18% of the gross income of single senior men, and 22% of the gross income of single senior women and senior couples in 1991. The percentage point decrease in the share of investment income over the 1981-91 decade was about the same for single men and women, about 8 percentage points, and 5 percentage points for couples. (This may be a cyclical phenomenon.)

2.2.3 Earnings Replacement Rates

Question: What earnings replacement rates are provided by CPP retirement pensions alone, and by the public pension

system as a whole?

The CPP was designed to complement the OAS program as it then existed. It was expected that private pension plans would build upon the CPP and raise the overall replacement rate. At inception the maximum CPP benefits (25% of average earnings) and full OAS (18% of average earnings in 1965) together would have replaced 43% of average gross earnings (which approximates the Year's Maximum Pensionable Earnings for the CPP, the YMPE) for a single earner at the average wage. As a basis for assessing the earnings replacement capacity of CPP/ OAS/GIS and the tax credits, this evaluation employs 43% of gross income as a standard. But since the goal of earnings replacement is to prevent an undesirable reduction in living standards on retirement, replacement of disposable income is a more relevant indicator and was also employed.

The combination of maximum CPP benefits and OAS/GIS (and seniors tax credits --the age credit and $1,000 private pension allowance) replaces 43% of pre-retirement gross earnings at the average wage (YMPE) of $33,400 in 1993, of a single senior with no private income in retirement. It replaces 56% of the disposable income of the same single senior. The maximum CPP by itself replaces about 24% and 32% of pre-retirement gross and disposable income, respectively, at YMPE average earnings for the same individual. This would be approximately the pre-retirement earnings replacement rate for an individual retiring in 1993, who was employed for the full 26 years when the CPP was in operation (1966-92) and who had earned the average annual wage during his/her working life. The CPP by itself meets its objective of 25% of average pensionable earnings.

The pre-retirement gross earnings replacement rate provided by the CPP, together with the OAS/GIS programs and the seniors' tax credits generally meets (and exceeds) the 43% evaluation criteria (or about what it replaced at inception in 1966) for most income levels at and below the average wage. There is no overall system replacement rate objective.

2.2.4 Rates of Return

Past generational rates of return calculated by the Chief Actuary, Office of the Superintendent of Financial Institutions (OSFI) and by other researchers were reviewed and generational and individual rates of return were calculated.

Generational internal rates of return for CPP as a whole stabilize at about a 5% nominal rate (1.5% real rate) for later generations, 2002 onwards, and between 6% to 7% nominal (2.5% to 3.5% real assuming a 3.5% annual rate of inflation) for current contributors under 30 years of age. Early generations of CPP contributors, earn unusually high rates of return of between 11% and 20% return on their contributions because of the plan's phase-in provisions; they obtained benefits far in excess of their contributions.

The CPP Pension-only[2] individual employee nominal rate of return would be about 8.2% (4.7% real) for someone in the 17% federal marginal tax bracket who retired at the age of 65 and died at 85 years of age. The corresponding nominal rate of return for a self-employed individual (who pays both the employee and employer CPP contributions) would be about 5.6% (2.1% real). A recently completed document, "*Actuarial Monograph on the Canada Pension Plan*" indicates that the real rates of return for Canadian stocks, long bonds, mortgages and treasury bills were 3.8%, 2.6%, 2.6%, and 2.9% respectively, over the period 1966-1993. Adjusting these rates to take into account the investment and administrative costs associated with using them to provide retirement income, or in a fashion comparable to the calculation of the CPP returns, would lower each of them by about 1%-1.5%.

The evaluation did not carry out an explicit comparison of individual rates of return on the CPP pension component with rates of return on other pension vehicles (RRSPs, RPPs, Registered Retirement Income Funds, etc.). This would have required comparisons of the true differences in investment risk, portability, protection against non-anticipated inflation, etc. The return on the CPP pension-only contribution is particularly enhanced by its unique features (e.g., full portability, low administration costs, protection against unanticipated inflation, a return tied to earnings growth and the unlikelihood that the government sponsor will default).

2.3 COST-EFFECTIVENESS

2.3.1 Affordability from the Standpoint of the Contributor

Question: Do projected increases in contribution rates and benefit payments threaten the "affordability" of the CPP in its current form?

What future contributors (as employees) can afford depends on their disposable income, not on gross income or gross CPP contributions. Many commentators appear to assume that higher CPP contribution rates will reduce the disposable income of future contributors below that of current contributors. The concern has been expressed that C/QPP gross costs will rise from 2.3% in 1992 as a proportion of gross domestic product to 4.5% in 2030. Between 1992 and 2030 projected employee contribution rates increase by 222% (from 2.4% to 7.72%) of contributory earnings according to the recently released *CPP Fifteenth Actuarial Report* of OSFI.

Assuming a real earnings growth rate of 1% per annum and that average and marginal income tax rates remain unchanged, the projected increase in real disposable income from 1995 to 2030 would be 32.4% for someone with earnings approximating the average annual industrial wage - YMPE. This is after taking into account the rising CPP contribution rates over this period. This person's real disposable income would have risen an additional 6.2% if contribution rates did not increase.

Under this real growth rate assumption, and assuming no change in taxation (tax brackets and tax allowances indexed to average wages) the "ability to pay" for CPP retirement benefits should not be affected significantly as real disposable income should continue to rise, other things being equal. However, "ability" and "willingness to pay" for CPP could be affected by other factors such as: how much of future real growth (productivity gain) would be directed towards growth in personal disposable income and; the need to finance other programs and to service or reduce government debt. Further increases in projected costs of CPP non-pension components --disability and survivor benefits would also affect the affordability of the program as a whole.

2.3.2 Net Cost of the CPP in the Tax-Transfer System

A significant proportion of contributory CPP benefits is returned to government as higher general revenues, reducing the net cost of the CPP and improving its fiscal "affordability". Simulations for the 1993 calendar year estimate that $7.54 billion of C/QPP benefits were returned to governments in personal income taxes (federal plus provincial) and reduced the costs of other federal seniors programs (OAS, GIS and SPA). These recoveries are 42% of C/QPP expenditures for fiscal 1993 ($18.16 billion). These recoveries, through higher tax revenues, include $2.54 billion and $1.84 billion to the federal and provincial governments, respectively, lower OAS/ GIS/SPA federal program expenditures by $3.05 billion and effect other program cost-savings of about $110 million. When the C/QPP tax credit ($1.78 billion) is taken into account, the net cost of C/QPP in the tax-transfer system is 68% of its gross cost. These estimates did not take into consideration account the employers' tax savings on their share of C/QPP contributions.

2.3.3 Demographic and Labour

Market Concerns

Question: Do demographic and labour market concerns about the future argue for changing the manner in which CPP is funded?

In 1980 the proportion of seniors in Canada's population (10%) was significantly lower than the average for the OECD countries (12%) but will be about equal the average in the OECD countries (21%) in 2050. By the 2030s, with the "baby boom" largely retired, the rate of growth of the senior population will be greater than in other countries because Canada currently has a younger population. A twofold increase in the seniors' dependency ratio between 1985 and 2025 will to some extent be compensated for by a decline in the dependency ratio of other groups (e.g., children, students, etc.). If participation rates of women grow to equal those of men by 2021, the labour force dependency ratio (i.e., the number of people out of the labour force divided by those in the labour force) is projected to be the same as now.

However, the redistribution of the dependent population from young to old and population aging is seen as a cause of concern because the per capita cost of supporting seniors (e.g., medical costs, C/QPP and old age transfers, etc.) is higher than for the young. This will mean a rising number of seniors who will be supported to some degree by the C/QPP and complementary social transfer programs (OAS/GIS/SPA, provincial programs) and perhaps through the provision of tax breaks for seniors (the age and pension credit). But if other demographic (population aging, immigration cycles, etc.) and economic trends (poverty, unemployment) cause other government program costs to rise in the future to maintain current (or even declining) levels of other social benefits (welfare, health care, etc.), this could make CPP and other government programs less affordable. Increases in CPP contribution rates may also be required to insure the continuing payment of CPP non-retirement pension benefits (i.e., disability and survivor payments).

The evaluation did not examine the implications of other important economic concerns about the future (e.g., the future fiscal environment).

2.3.4 Role of the CPP Fund

Question: Does the CPP (investment) Fund fulfil its intended role? Is it important or desirable for the CPP Fund to maximize interest income in the same manner as private pension funds?

The CPP is close to a pay-as-you-go (PAYGO)-based plan. Contribution rates are calculated from the ratio of projected expenditures to contributory earnings (PAYGO rates), adjusted for changes in investment income from the CPP Fund and administrative costs. In the case of the CPP, the size of the Fund ("funded" liability) is far less than the Plan's actuarial liability, and it is intended to be so. The CPP Fund is a small proportion of the CPP's unfunded liability, sufficient only to pay two and one-half years' benefits in 1994. The CPP Fund is intended to smooth the effects on changes in the contribution rates of expected and unexpected changes in demographic and economic conditions, so that contributions can move smoothly and gradually to levels required to meet future benefit outlays.

At the end of each quarter, any credit balance in the CPP Fund in excess of the operational balance constitutes an increase in the CPP Fund and is available as loans to the provinces in proportion to the contributions made by the residents of the respective provinces. The interest earned on the securities is payable semi-annually and is based on the average yield to maturity on all outstanding Government of Canada bonds maturing in 20 years or more. Recently, loan repayments have been allowing the CPP to respond to an unanticipated fall in contributions and an unanticipated increase in benefits (e.g., pension, disability, survivor) without the unplanned changes in contribution rates that would be necessary in a pure PAYGO plan. This is fully consistent with the Fund's purpose.

It would be highly impractical, if not impossible, for an established PAYGO plan to avoid intergenerational transfers by a substantial shift toward full funding. During the transition period, working generations would be contributing to pay for two sets of benefits--the retired generations who were "promised" a pension under the "old" PAYGO plan, plus the working generations' own pensions under the "new" fully-funded system. The 1993 report of the Canadian Institute of Actuaries *Task Force on Social Security Financing* endorsed the CPP funding method. It concluded that "this method of (pay-as-you-go) funding is a practical method of financing and provides as much real security for future benefits as other financing methods such as full advance actuarial funding" .

The federal government, as guardian of the Fund, cannot maximize interest income by charging the provinces a higher rate than is "charged" by its own bond-holders, domestic and foreign. The federal long-term bond rate must be competitive with other interest rates on risk-free investments. If the rate of interest charged on the account were to rise, income taxes or business taxes or sales taxes would have to pay the higher interest cost of borrowed money from the CPP Fund. There is no consensus on the net effect of public pension programs on aggregate savings and capital formation. The evaluation did not examine the question of investing some of the CPP Fund moneys in private sector assets in the same way as the QPP.

Reports of the CPP Fund "going broke" because it is not lending all the interest back to the provinces (and has required some repayment of principal in 1993 and 1994) and the rising cost of benefits are of concern. The *CPP Fifteenth Actuarial Report* (February 1995) of OSFI projects that CPP contribution rates will continue to rise well into the next century. The report shows that in the absence of increases in the current schedule of contribution rates (1992-2017) negotiated in 1991 by the federal and provincial governments, or a decrease in benefits, the Fund would be depleted by 2015, and in a deficit position over the period 2015-2022. This would be caused primarily by rising CPP disability claims. The federal and provincial governments would then have to cover from their general revenues any annual shortfall in CPP funding requirements which would be as high as $18.7 billion in 2019. The *CPP Fifteenth Actuarial Report* derives an alternative set of higher CPP contribution rates than the current schedule over the period 1997-2019, that would prevent a reduction in the annual 'account-expenditure ratio' (the ratio of funds in the CPP 'year-end Account', or CPP Investment Fund, to the annual costs of all CPP benefits plus administrative expenses) below 1.56, and the depletion of the CPP 'year-end Account'. The same report notes however, that the deficit situation under the current contribution rate schedule would correct itself, as in 2050 the 'account-expenditure ratio', and 'year-end Account' balance, would be the same under the higher rate scenario as under the current contribution rate scenario.

The CPP contribution rate schedule will be examined by the federal-provincial quinquennial review by Ministers of Finance this year. The CPP disability program is also the subject of a separate HRDC evaluation which is now underway.

2.3.5 Intergenerational Transfers

Question: Are Intergenerational transfers through the CPP justifiable?

Intergenerational transfers are an unavoidable consequence of starting up a PAYGO-like system such as the CPP. The CPP contribution and benefit provisions are a contingent formula linking the standard of living of pensioners to the general standard of living. Many intergenerational transfers also occur in other parts of our social system. They are an unavoidable consequence of starting up non-contributory programs (OAS, GIS); There is also an element of intergenerational transfer through tax relief on RPP and RRSP contributions. They are the consequence of inter-personal transfers through public policy programs which span more than one generation. There is some distribution of taxes and benefits which maintains an appropriate relationship among the living standards of different groups/ generations in society.

It was considered to be beyond the scope of this evaluation to ascertain the actual size of past or potential future intergenerational transfers through the CPP; neither did the study explore alternatives for bringing about a reduction in such transfers. Focusing only on the CPP and ignoring other inter-program and inter-temporal effects would not accurately reflect the true net intergenerational transfers through the CPP component of the tax/ transfer/pension system.

Younger "baby boomers" will finance part of the retiring benefits of the earlier retiring "boomers", and these retirees will pay back a large portion of their CPP benefits to the two senior levels of government. The generations which pay the benefits of the baby boomers will be partly compensated by their own longer benefit period as life expectancy rises. In this context, if the 1974 generation were to fund its own retirement pension benefits in a manner which eliminated all possibility of intergenerational transfers through the CPP, its lifetime contribution rate would be about 87% of the projected PAYGO rate for retirement pension benefits.

2.4 KNOWLEDGE OF THE CPP

Question: What messages need to be sent to Canadians about the role and viability of the CPP?

Recent evidence suggests a wide gap between the actual and perceived circumstances of the CPP in the public mind. There is a lack of public knowledge of the purpose of the CPP -what the pension represents. Also, there is a fear that future generations may be unable and/or unwilling to pay the promised benefits, and concerns about its future affordability.

The evaluation concludes that the fears about the viability of the CPP are exaggerated, due to a lack of adequate information about the CPP and misinterpretation of existing available information. Whether the public supports the CPP and whether it is willing to pay the contribution rates, depends on an accurate perception of what the CPP offers the individual contributor, and on how the information is made available to the public.

3.0 CONCLUSIONS

✔ There is a continuing need for a compulsory and contributory CPP pension program. Private pension plans and RRSPs provide inadequate coverage for many workers, and especially for lower-income and part-time workers, for private sector workers, and those employed in smaller firms. The CPP is a complementary part of any public/private national seniors benefit program comprised of voluntary private pension components (RPPs, RRSPs), the OAS, the income-tested Guaranteed Income Supplement (GIS) and complementary provincial programs.

✔ CPP pensions supply an increasingly important portion of the gross income of seniors. They also make an important contribution to the disposable income of all seniors.

✔ The pre-retirement gross earnings replacement rate for CPP and the OAS/GIS programs and seniors' tax credits exceeds 43% for gross income levels below the average industrial wage for a single senior; this was the coverage in 1966 when the program was put in place. It replaces 56% of the disposable income of the same senior. There is no overall replacement rate objective for the 'system' (CPP, OAS/GIS and the tax credits).

✔ The maximum CPP by itself replaces about 24% and 32% of pre-retirement gross and disposable income, respectively, at YMPE average earnings for the same individual. The CPP by itself meets its objective of 25% of average pensionable earnings.

✔ Generational internal rates of return on CPP as a whole stabilize at about a 5% nominal rate (1.5% real rate) for later generations, 2002 onwards, and between 6% to 7% nominal (2.5% to 3.5% real) for current contributors under 30 years of age. CPP pension-only real rates of return would be about 4.7% for an employee in the 17% federal marginal tax bracket who retired at age 65 and died at age 85. A recently completed study by the Office of the Superintendent of Financial Institutions indicates that real rates of return for Canadian stocks, long bonds, mortgages, and treasury bills were 3.8%, 2.6%, 2.6%, and 2.9%, respectively, over the period, 1966-93, and before taking into account the administrative and investment costs associated with using them to provide retirement income.

✔ Projected contribution rates do not by themselves suggest that the CPP will become unaffordable using future expected growth in real disposable income as an indicator. The CPP will be affordable in the future if at least a 1% per annum real growth rate is maintained, other things being equal. However, "ability" and "willingness to pay" for CPP would be affected by other factors: how much of future real growth (productivity gain) would be directed towards growth in personal disposable income and; the need to finance other programs and to service or reduce government debt. Further increases in projected costs of CPP non-pension components -- disability and survivor benefits would also affect the affordability of the program as whole.

✔ The efficiency with which the CPP performs its task is enhanced by its effects on the net costs of other programs for seniors and on the tax revenues recovered through the CPP pension. When the C/QPP tax credit is taken into account, the net cost of C/QPP in the tax-transfer system is 68% of its gross cost. These estimates did not take into account the employers' tax savings on their share of C/QPP contributions.

✔ Intergenerational transfers are misunderstood and are not easily measurable. They are an unavoidable consequence of starting up anything other than a fully funded plan. They are a political value judgment and occur in other transfer and tax assistance programs (e.g. GIS, RPPs, RRSPs, etc.).

✔ Recent evidence suggests a wide gap between the actual and perceived circumstance of the CPP in the public mind. These fears have been exaggerated by the lack of adequate information about the CPP.

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Chapter I - Introduction

1.1 BACKGROUND

This report presents the findings and conclusions of Phase I of the Evaluation of the Canada Pension Plan (CPP), namely of the CPP retirement pension component and its funding mechanism. A Phase II evaluation of CPP ancillary benefits (disability and survivor benefits, child rearing and drop-out provisions and credit splitting) is about to begin. The Terms of Reference for this Phase I evaluation were approved by the Senior Assistant Deputy Minister and Chair of the Audit and Evaluation Committee of Health and Welfare Canada on January 16, 1993.[1]

This evaluation is being carried out in conformance with Treasury Board policy that departments undertake evaluations of their programs when needed, with a view to using the results of such evaluations to confirm, modify or recommend changes to their programs in order to better serve the Canadian public.[2]

The detailed analysis is to be found in the supporting technical studies performed by the consultants, Paul Dickinson of McGill University, and Informetrica Limited. Some of the findings in these background studies have also been further interpreted and analyzed by Evaluation Branch, Human Resources Development Canada (HRDC). This evaluation report is intended to help the reader place each piece of analysis within the "big picture," and to illustrate why each analytical component is important and often related to other components.

An Executive Summary has been prepared for this phase of the CPP evaluation.

1.2 SCOPE OF THE EVALUATION

The purpose of the Phase I Evaluation of the CPP is to determine the extent to which the CPP Program successfully carries out its retirement pension provision function, and to assess some of its funding aspects.

The following presents the Phase I evaluation questions that address "pension" and "contribution/funding" issues, which are classified according to the major Treasury Board categories of evaluation issues, (program success, program relevance and cost-effectiveness):

Program Success
(Objective Achievement/Impacts)

✔ What proportion of gross and net income of retirees comes from CPP? (Terms of Reference, Question A.1)

✔ What earnings replacement rates are provided by CPP retirement pensions alone, and by the public pension system as a whole? (Terms of Reference, Question A.2).

These questions relate to the adequacy of retirement pensions. The remaining questions address the continuing rationale for the design of the CPP (its contribution and funding method) and the future cost-effectiveness of the CPP.

Relevance
(Program Rationale)

✔ Is a compulsory and contributory CPP still warranted in the changed and changing system of public and private pensions? (Terms of Reference, Question B.1)

✔ Does the CPP fund fulfil its intended role? Is it important or desirable for the CPP fund to maximize interest income in the same manner as private pension funds? (Terms of Reference, Question B.2)

Cost-Effectiveness
(Need, if any, for Alternative Approaches)

✔ Are inter-generational transfers through the CPP justifiable? (Terms of Ref., Question B.3)

✔ Do projected future increases in contribution rates and benefit payouts threaten the affordability of the CPP in its current form? (Terms of Reference, Question B.4)

✔ Do demographic and labour market concerns about the future argue for changing the manner in which the CPP is funded? What messages need to be sent to Canadians about the role and viability of the CPP? (Terms of Reference, Question B.5).

In addition to these evaluation questions, this study also sheds light on the following related sub-questions:

- How does the CPP affect the disposable incomes of recipients and contributors? What is the cost of the CPP for individual contributors, the benefits to CPP recipients, and the implications for inter-generational transfers?

- How is the CPP linked to the overall tax/transfer system? How does the tax system and the seniors' benefit system affect the net cost of the CPP?

- What is the individual's gross rate of return on CPP contributions?

- Are the costs, benefits and rates of return on the CPP correctly perceived by the press and the public? Might misperceptions affect the overall support for the plan and willingness to contribute to the plan?

- Are compulsory contributions through the CPP justifiable in their own right, and as a component of the broader seniors' benefit system?

1.3 RETIREMENT INCOME SYSTEM

The retirement income system is essentially a three-tiered system. The first tier is the transfer component which provides basic income and is funded through taxation. It is made up of the Old Age Security Program (OAS), the Guaranteed Income Supplement (GIS) Program and Spousal Allowance (SPA), age-related tax and pension credits as well as provincial/territorial income support programs targeted to the elderly. The OAS Program is available to everyone who meets the residence and age requirements. The GIS and SPA programs are income-tested components of the OAS Program provided to those below a designated income level. Some provincial governments offer additional income-tested benefits to low-income pensioners.

The second tier is the major public pension program, the earnings-related Canada/ Quebec Pension Plan (C/QPP), which is financed through contributions. The third tier is comprised of the tax-assisted private savings and investment plans (occupational/private registered pension plans--RPPs, Registered Retirement Savings Plans -- RRSPs, and private investments). The last two tiers are earnings-related pensions (i.e., contributions are related to earnings, and benefits are related to contributions). Earnings on private savings are also a source of income for seniors.

Also parts of the entire public/private pension system are the provincial/territorial tax credits in the personal income-tax system, and provincial and territorial income support programs. So are the benefits "in-kind," such as housing subsidies and special discounts made available to the elderly.

The CPP provides contributors and their families with a basic level of protection against the loss of earnings due to retirement, disability or death of a contributor to the plan. The basic intent of the Act was stated as follows:

"*..to establish a contributory pension plan ensuring that, as soon as possible in a fair and practical way, all Canadians will be able to look forward to retiring in security and with dignity... (but) it is not intended to provide all the retirement income or survivors income which many Canadians wish to have...Protection beyond that level will remain a matter of individual choice*" [3]

Both the CPP and QPP were specifically designed to play a fundamental, although not exclusive, role in replacing the employment earnings of all Canadians. They were intended to provide a base to which private plans would be added. The CPP and QPP would form an integral part of the retirement income system which would also encompass old age security and private pension plans. C/QPP benefits were not to provide all of the income senior Canadians would want. Neither were they specifically targeted at lowest-income groups. While the combination of OAS/GIS/SPA provided a minimum level of income in retirement, the CPP was designed to maintain consistency in living standards before and after retirement.

The specific objective is to replace earnings equal to 25% of average career earnings up to a ceiling, the Year's Maximum Pensionable Earnings (YMPE).

The CPP and the QPP, which is a comparable plan to the CPP, are earnings-related, contributory, mandatory, and publicly administered components. The CPP is self-supporting, with all CPP benefits being paid from the contributions of employees and employers and from the investment earnings of the CPP Fund (Account). The retirement, disability and survivor benefits provided by the CPP are all related to the level of eligible earnings on which contributions were paid. CPP is an essentially Pay-As-You-Go (PAYGO)-based plan. Contribution rates are calculated from the ratio of projected expenditures to contributory earnings (PAYGO rates), adjusted for changes in investment income from the Fund and administrative costs. All employed Canadians, who are from 18 to 70 years of age and have minimum earnings, contribute to the C/QPP.[4]

1.4 METHODOLOGY

The approach to this evaluation takes into account the following:

- ✔ that the CPP must be evaluated against both its own objectives and those of the overall system, of which it is but a component;

✔ the effects of the other system components on the performance of the CPP, and vice versa; and

✔ the impact of the CPP program must be evaluated against a set of alternative tax/ benefit systems or policy alternatives. (These are comparison cases to illuminate the true net effects of the CPP program.)

The analysis addresses most of the evaluation questions by considering the effects of the CPP on current and future individual beneficiaries and contributors. In addition, there are contextual discussions of aspects which link the individual-oriented analysis to the broader economy and the overall tax/transfer system. These aspects also impact on the analysis of the broader evaluation questions.

1.4.1 Data and Analytical Models

Phase I of the CPP evaluation made use of the following data bases and analytical models:

✔ Income Security Programs Branch, HRDC data bases (Statistics Related to Income Security Programs, Canada Pension Plan/Old Age Security Statistical Bulletin, etc.) and the 1981, 1989 and 1991 Statistics Canada, Survey of Consumer Finance data to investigate the importance of the CPP and other pension income sources in the overall income of current seniors;

✔ data from individual-oriented system models of representative CPP contributors/ beneficiaries developed by the consultant, Paul Dickinson, to estimate the effects of projected CPP contribution rates, mortality improvements and other demographic changes on representative individual contributors and recipients in future generations;

✔ use of the CPP valuation model of the Chief Actuary, Office of the Superintendent of Financial Institutions (OSFI), to provide additional information on future contribution rates, internal rates of return and additional base data for the system model analysis for representative individuals (e.g., for modelling different assumptions about alternative contribution rates schedules or taxation approaches);

✔ use of the Modular Analysis Package for Systems of Income Transfer (MAPSIT) model of Strategic Policy, HRDC, to generate base data to examine the net effects of the CPP on disposable income of seniors, and the interaction between the CPP and the rest of the tax/transfer system on the effective (marginal) tax rates faced by seniors, and on earnings replacement rates; and

✔ use of Simulation/Tabulation (SIMTAB) model of Income Security Programs Branch, HRDC, to estimate the macro effects of program changes on program costs, tax collected, and the costs of other federal programs.

As well, macro-econometric simulations were carried out with a current macro-economic model (Informetrica's TIM model) of the Canadian economy to examine:

✔ the impact on the main economic indicators of proposed increases in CPP contribution rates over the period 1992 to 2020 and on the CPP performance and affordability; and

✔ implications of changes in immigration and fertility rates for the economy, dependency ratios, productivity, and CPP performance and affordability.

The evaluation did not carry out a comprehensive empirical analysis with tax-filer data of the need for C/QPP and/or OAS/GIS/SPA transfer payments and their impact on disposable income by income class. Section 241 of the Income Tax Act prohibits the use of taxfiler data for this purpose. Rather the analysis employed models of representative individuals in different income classes to determine the contribution made to the gross and disposable income of seniors by CPP pensions and other senior benefit program (OAS/GIS) payments. This was carried out with the help of the MAPSIT model of Strategic Policy, HRDC.

1.5 PROCESS

Steering Committee

The evaluation was undertaken under the direction of a Steering Committee comprised of senior federal officials with Income Security Programs Branch and Evaluation Branch, HRDC, and the Tax Policy Branch of Finance Canada. The management of this Phase I of the CPP evaluation was transferred from Program Evaluation Division, Policy and Consultation Branch, Health Canada to Evaluation Branch, HRDC, on April 1, 1994. This followed upon the restructuring of federal departmental responsibilities in 1993, which created the new federal department of Human Resources Development Canada.

Role of Consultants

Paul Dickinson of McGill University undertook the major part of the information collection and analysis with some technical assistance from Evaluation Branch, HRDC. Informetrica Limited carried out some econometric simulations to ascertain the effects of increasing contribution rates, and implications of changes in future levels of immigration for the economy, plan performance and affordability.

The specification of the evaluation questions and the methodological approaches also benefited from an extensive review by Paul Dickinson of the literature directly related to specific aspects of the analysis, which was carried out just prior to this phase of the evaluation.

Consultations

Consultations were held with Members of the Steering Committee, and other federal officials and analysts, to seek guidance in defining the evaluation issues/questions, in developing the methodological approaches and to identify and acquire the necessary information and data. Technical advice was provided by the Chief Actuary of the Office of Superintendent of Financial Institutions and senior analysts with Finance Canada and Income Security Programs Branch, HRDC. The evaluation was also assisted by computer modelling expertise and access to large data bases residing in Income Security Programs Branch, HRDC.

1.6 ORGANIZATION OF THE REPORT

Chapter I outlines the purpose of this evaluation, the methodological approaches as well as a brief program description. Chapters II to IV provide an overview of the evaluative analysis and evaluative findings. The evaluative findings are presented according to the major categories of evaluation issues set out in the most recent Treasury Board guidelines for evaluation (*Treasury Board Manual on Evaluation and Audit*, 1992) specifically, "rationale/continued relevance," "objective achievement/impacts and effects," and "program cost-effectiveness."

Chapter II looks at the rationale for a compulsory and contributory CPP retirement pension system.

Chapter III presents the findings on program objective achievement. First, it provides a brief statistical profile of the pension component of the CPP and examines program success issues. It then examines the role of the CPP in the seniors' income system, the findings on pre-retirement income replacement rates, and how well the CPP retirement component has met its objectives.

Another section reviews generational and individual rates of return on contributions to the CPP which have received a lot of attention in the popular media in recent times.

Chapter IV examines issues of future program cost-effectiveness and other related issues. Projected contribution rates are examined, and the real costs of the CPP to contributors. This is followed by a review of the broader issues, especially the implications for the future operation and affordability of the CPP of potential future demographic and labour market concerns. It also examines whether the CPP Fund fulfils its intended role. As well, Chapter IV discusses such other issues as the implications of the program for government general revenues and program costs and the significance and role of intergenerational transfers. A last section reviews the findings of econometric simulations carried out to estimate the effects on economic variables and plan affordability of moving immediately to PAYGO rates and of higher future immigration levels.

Finally, Chapter V looks at the question of potential misperceptions about the role and viability of the CPP and how it might affect overall support for the plan and the willingness to contribute to it.

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Chapter II examines the rationale for a compulsory and contributory CPP retirement pension system within the retirement income system.

The chapter summarizes the evaluation findings for the evaluation questions "Is a compulsory and contributory CPP still warranted in the changing system of public and private pensions?" (Terms of Reference, Question B.1) and "What messages need to be sent to Canadians about the role and viability of CPP?" (last part of Terms of Reference, Question B.5).

2.1 COVERAGE BY PRIVATE PENSION PLANS

It was originally expected that private pension plans would top up or supplement C/QPP. Criticism regarding adequacy of coverage in the private pension system have been the major driving force behind past proposals to change the public pension plan. They call into question whether or not expectations regarding private pension coverage will be met. In 1991 the National Advisory Council on Aging argued that private pension coverage, and provisions for vesting, portability, survivors' benefits and indexing have not lived up to initial expectations.[5]

Analysis shows that criticisms concerning the adequacy of coverage in the private pension system are more true for some sectors of the working population than for others.

2.1.1 Registered Pension Plans (RPPs)

The most recent change in the legislated minimum standards for RPPs began with amendments to the federal *Pension Benefits Standards Act* of 1985,[6] which took effect on January 1, 1987. Statistics Canada data show that:

- by January 1, 1990 more than 70% of RPP members had full vesting after two years;
- in 1970 only 7% of members were in plans with some form of automatic adjustment for inflation, usually limited to 2% per year; by comparison, in 1989 more than one-third of workers were in plans with some adjustment for inflation; and
- more RPPs now provide a "bridging benefit" until C/QPP and OAS come into pay, and some two-thirds of RPP members are in plans with some form of C/QPP integration.[7]

The new provisions should improve the retirement incomes of workers who are covered. As well, the provisions could increase coverage as time passes, since more younger workers will move into the age groups where coverage is highest. On the other hand, they might have slowed or even reversed the growth of employer-sponsored plans, and contributed to the recent trend toward money purchase plans and away from defined benefit plans.

Most private plan members were in trusted plans, accounting for about 80 percent of plan assets in 1989. In this context, the RPPs also include employer-based pensions for public service (federal, provincial, municipal) workers. The balances in such plans increased from $13 billion in 1971 to over $177 billion in 1989. Nevertheless, the current challenge is that only 49% of paid workers aged 20 through 64 were covered by employer-sponsored plans in 1989, but with big differences by firm size, earnings level, age and gender, and between the public and private sector:[8]

- 54% of men were covered, and 42% of women;
- 73% of public sector workers were covered, and 39% of workers in the private sector;
- 53% of full-time workers 20 years of age and over were covered, comprising 80% of workers in the public sector and 43% in the private sector, but only 24% of part-time workers were covered;

✔ 81% of men and 66% of women in the public sector were covered, but only 47% of men and 30% of women in the private sector;

✔ less than 15% of workers in firms employing less than 20 people were covered, but 72% in firms employing 500 or more; and

✔ coverage was 82% for those with earnings between $40,000 and $60,000, and 27% for those earning less than $20,000.

Changes in the labour market such as more part-time workers, more job turnover, more self-employed workers and small employers, problems caused by high unemployment rates and poverty have also contributed to the low level of work-related pension coverage. These developments now place in doubt the expectation that a sufficient number of lower-income Canadians will acquire private-pension entitlements throughout their working lives, a major assumption underlying the design of Canada's public pension system.[9] At the same time the integration of the C/QPP with the RPPs has meant that the C/QPP has become a cornerstone of the RPP system. In this regard concern has been expressed that the rising cost of C/QPP may hamper efforts to expand the private pension system if it reduces contributions to RPPs.[10]

2.1.2 Registered Retirement Savings (RRSPs)

The total value of RRSP holdings increased dramatically over the decade (1981-91), from about $21.9 billion in 1981 to nearly $130 billion in 1991, and almost doubled between 1986 and 1991.[11] As with RPPs, the data on RRSPs show that the private pension programs are more important for higher-income workers.

Although about 20% of tax-filers contributed to an RRSP in 1987, there is substantial variation by income range and age group.[12]

✔ About 15% of tax-filers with income from $10,000 to $19,999 contributed, compared with over 50% of tax-filers in higher income brackets, reaching 68% among those with incomes of at least $100,000.

✔ Little more than 1% of total contributions was made by the 34% of tax-filers reporting income of less than $10,000.

✔ Nearly 44% of contributions were made by tax-filers aged 50 and over.

A recently completed study reveals that in 1992 about one-quarter of people earning less than $30,000 contributed to an RRSP, with an average contribution of less than $2,000. This contrasts with people earning $80,000 or more, of whom 81% contributed to an RRSP with an average contribution of $7,200.[13] Lower-income earners have less tax incentive to employ RRSPs since they are in a lower tax bracket and the availability of OAS and income-tested benefits like GIS/SPA and provincial welfare assistance makes the need to invest in RRSPs much less important.

Part of the explanation for the relationship between lower earnings and lower incidence of RRSP contributions may reflect the fact that both income and RRSP contributions rise with age. In general younger people may have less income, and are more concerned with current consumption rather than distant retirement prospects--a potential advantage of the compulsory CPP. On the other hand, older people defer more income, partly because they spend less on children and mortgages, etc., and partly because the reality of retirement is closer and more visible.

An examination of 1992 taxfiler data revealed that the proportion of tax-filers contributing to the public pension system (C/QPP) in 1992 overwhelms that contributing to RPPs and RRSPs among the lower-income groups (Exhibit II-1).

About 75% of tax-filers in the $20-29,999 income range in 1992 contributed to C/QPP compared with 23% and 29% to RPPs and RRSPs respectively; 62% of tax-filers in the $10,000-19,999 income range were C/QPP contributors compared with 9% and 17% for RPPs and RRSPs respectively, in 1992. Taxfiler data for 1991 reflect almost the same distributions. Some contributors over 65 years of age, mainly in the higher tax brackets, would have made some RRSP contributions, a few over 65 years of age, RPP contributions.

EXHIBIT II-1:

Retirement Saving Contributions by Taxfilers, Proportion Contributed by Selected Income Classes, 1992 (Percentages)

INCOME LEVEL	C/QPP	RPPs	RRSPs
$10-19,999	62.3	9.1	17.3
$20-29,999	75.2	23.1	29.4
$30-49,999	85.1	42.2	47.1
$50-74,999	88.5	51.5	62.6
All groups	62.2	19.2	25.3

Source: Revenue Canada, Taxfiler Data Base, 1992

2.2 NEED FOR A COMPULSORY AND CONTRIBUTORY CPP

The relative importance of earnings replacement through public and private pension plans in the future may depend on trends in the nature of work and employment. The characteristics of new jobs have changed, and many are "non-standard," often part-time jobs which may pay lower wages and are less likely to have employer-sponsored RPPs:

✔ in the ten years since 1981, part-time workers increased from 9% of employees to 19%;

✔ about three-quarters of all new jobs in the past 25 years have been created in service industries, typically non-union and usually with lower wages;

✔ on the other hand, because plan participation increases with age, the pension system ultimately could absorb many of the younger workers as they get older.[14]

Recent trends in private pension plan coverage and in the distribution of new jobs toward part-time, short-term and low-wage positions raises the question as to whether there will be any significant increase in RPP coverage for lower income workers in the future. The projected increase in CPP contribution rates might also reduce the contributions to RPPs since most RPPs are integrated with the C/QPP. And although RRSP contributions have risen substantially in recent years, both the incidence of contributions and the average contribution are sensitive to income levels and the income distribution in society.

Since lack of private sector pension coverage is particularly noticeable among lower-earnings workers, it is all the more important that the public pension system provide adequate replacement for those below average earnings. For this reason it confirms that a compulsory publicly operated CPP is a complementary part of any public/private national seniors benefit program with voluntary private pension components (RPPs, RRSPs). A compulsory and contributory CPP is also justified on the grounds that younger individuals may be more concerned with consumption than distant retirement prospects. They often face heavy financial obligations associated with establishing separate households and families, e.g., acquiring housing, raising and educating children, and therefore a compulsory plan is necessary. Potential efficiencies in administration costs, security and public acceptance of such a plan in a country like Canada, also argue in favour of a publicly operated pension plan.

This analysis takes into consideration the fact that voluntary RPPs and RRSPs are not intended to meet the needs of the lowest-income seniors; the latter rely much more on the public pension system as a

whole (CPP, OAS/GIS) and tax credits; the public pension system replaced 91% of disposable income for a single senior at half pre-retirement average earnings, and half CPP benefits in 1993 (Chapter III, Section 3.3). As well, the existence of an income-tested GIS and complementary provincial programs makes a compulsory/ contributory CPP program warranted in this public-private pension system.

2.3 CONCLUSIONS

There is a continuing need for a compulsory and contributory CPP pension program. Private pension plans and RRSPs provide inadequate coverage, especially for lower-income and part-time workers, for private sector employees, and those in smaller firms.

The CPP is a complementary part of any public/private national seniors benefit program comprised of voluntary private pension components (RPPs, RRSPs), the OAS, the income-tested Guaranteed Income Supplement (GIS) and complementary provincial programs.

Chapter III - Objective Achievement

Chapter III provides a brief profile of past trends in the pension component of CPP activity. It then examines the role of the CPP in the seniors' income system, its importance as an income source for seniors, its pre-retirement income replacement rates, and how well the CPP pension component has met its objectives. Finally, the analysis and findings on the question of generational and individual rates of return on contributions to the CPP are reviewed.

3.1 TRENDS IN CPP PARTICIPATION

Exhibit III-1 summarizes the program data for 1971, 1981 and 1991 as it relates to CPP contributors and contributions.

Contributors

Program data reveals that about 9.6 million people contributed to the CPP in 1991 with another 3.1 million contributing to QPP. The number of CPP contributors increased by over 41% between 1971 and 1991. As well, over the same 20-year period female contributors rose by 80%, and male contributors by 23%.

Contributions

Total contributions to the CPP in 1991 were $8.1 billion, almost 10 times the total in 1971. Over this 20-year period, contributions by females rose by almost 15 times, and contributions by males by about eight times the 1971 level. The proportion of contributions from women increased from 26% in 1971 to 38% by 1991. The average annual contribution for women rose (from about $90 in 1971 to $728 in 1991), vis-à-vis that for men (from about $141 in 1971 to $935 in 1991).

The data show that there has been substantial growth in the number of CPP contributors and in the total contributions over the period 1971 to 1991. In particular, there has been a notable increase in the number of female contributors and in the relative proportion of contributions from females to the CPP Fund. This substantial growth in CPP contributors and contributions resulted from the combined effects of productivity growth, inflation, and labour force growth, the latter caused in particular by the higher labour force participation rate of women. Part of this increase in contributions in recent years was also attributable to the annual rise in CPP contribution rates since 1986.

EXHIBIT III-1

CPP: Contributors and Contributions, Retirement Pension

	CPP Contributors (000,000)		Contributions ($000,000)			
	Male	Female	Total	Male	Female	Total
1971	4.4 (65%)	2.4 (35%)	6.8 (100%)	618 (74%)	215 (26%)	832 (100%)
1981	5.1 (59%)	3.5 (41%)	8.6 (100%)	2,091 (67%)	1,048 (33%)	3,139 (100%)
1991	5.4 (56%)	4.3 (45%)	9.6 (100%)	5,002 (62%)	3,115 (38%)	8,117 (100%)

Source: Statistics Related to Income Security Programs, HRDC, April 1994

Benefits

The number of beneficiaries and value of CPP retirement benefits also rose (Exhibit III-2).

CPP beneficiaries rose from about 187 thousand in 1971 to just under 1.9 million in 1991, by about ten times, while the value of these retirement benefits increased from about $57 million in 1971 to approximately $7.6 billion in 1991. Benefit payments were low in the early years because of the phase-in period (1966-76) for benefit entitlements.

Data for 1993 reveals that the number of beneficiaries from CPP retirement pensions had risen to just under 2.1 million, with payments rising to just under $9.2 billion. In particular, the proportion of women receiving CPP benefits rose significantly, from about 24% in 1971 to 43% in 1991, caused mainly by past increases in participation rates of females in the labour force.

3.2 ROLE OF THE CPP IN THE SENIORS' BENEFIT SYSTEM

This section summarizes the evaluation findings which respond to the evaluation question "What proportion of gross and net income of retirees comes from CPP?" (Terms of Reference, Question A.1).

3.2.1 C/QPP as an Income Source[16]

The proportion of senior single men, women and couples, age 65 and over, with C/QPP as a source of income, rose significantly over the decade 1981-91. But there are significant differences between sub-groups of the senior population as to the relative importance of C/QPP as a source of income (Exhibit III-3). The differences between senior singles and couples are substantial, partly because of the fact that a couple has two potential recipients.

EXHIBIT III-2

CPP: Beneficiaries and Benefits, Retirement Pension

	CPP Beneficiaries (000)		CPP Benefits ($'000,000)			
	Male	**Female**	**Total**	**Male**[15]	0 **Female**	**Total**
1971	142 (76%)	45 (24%)	187 (100%)	46* (81%)	11* (19%)	57 (100%)
1981	577 (67%)	280 (33%)	857 (100%)	1,128* (75%)	379* (25%)	1,507 (100%)
1991	1,082 (57%)	801 (43%)	1,883 (100%)	5,283* (69%)	2,359* (31%)	7,642 (100%)

*Source: Statistics Related to Income Security Programs, HRDC, April 1994. *The value of male and female benefits were estimated.*

EXHIBIT III-3

Changing Incidence of Gross Income by Source,
1981, 1991 Census Family Single Seniors (CF = 1) and Couples (CF = 2)[18](Percentages)

Income Source	Single Men 65+ 1981	1991	Single Women 65+ 1981	1991	Couples Both 65+ 1981	1991
C/QPP	63.5	79.6	40.1	68.1	78.4	90.3
OAS/GIS	98.1	98.7	98.2	98.6	99.0	99.6
Private Pensions	33.7	40.7	22.9	33.4	46.2	60.3
Investments	62.0	54.9	57.2	59.2	77.4	73.2

Source: Statistics Canada, Survey of Consumer Finances Data. Private pension income includes employer pension plans and RRSPs.

✔ For single seniors, about 80% of men and 68% of women in 1991 received C/QPP compared with 63% and 40% respectively, in 1981.[17] In 1991 about 90% of couples with both partners at least 65 years of age, received C/QPP benefits (up from some 78% in 1981).

✔ For single seniors, about 41% of men and 33% of women in 1991 received private pension income compared with 34% and 23% respectively, in 1981. About 60% of couples received private pension income in 1991, up from 46% in 1981, a greater proportion than for singles.

✔ The analysis in the background studies reveals that the proportion of single seniors aged 65 to 74 with C/QPP income increased from roughly 61% in 1981 to 78% in 1991. But among single seniors aged 75 and over, the proportions increased from less than 31% to 64%.

3.2.2 Composition of Gross Income[19]

C/QPP provides an important source of income for seniors. Again, there are differences by sub-group and in the changes over time (Exhibit III-4).

✔ C/QPP payments represented 18%, 15% and 17% of the gross income of single senior men, women and couples, respectively, in 1991. The percentage point increase in the share of C/QPP over the 1981-91 decade was about the same for all three groups (about 7 percentage points).

✔ Private pension income accounted for 14% of the gross income of single senior women, and 20% of the gross income for single senior men or senior couples in 1991; the percentage point increase in the share of private pensions over the 1981-91 decade was about the same for single men and women, about 5 percentage points, and about 9 percentage points for couples.

✔ The share of investment income decreased over the 1981-1991 decade; it represented 18% of the gross income of single senior men, and 22% of the gross income of single senior women and senior couples in 1991. The percentage point decrease in the share of investment income over the 1981-91 decade was about the same for single men and women, about 8 percentage points, and 5 percentage points for couples.

✔ OAS/GIS provided 31% and 39% of the total income in 1991 for single men and women, respectively. This compared with about 29% of the gross income of couples. This was a 2 to 4 percentage point decrease in these shares for these groups from 1981.

✔ The gross income shares analysis also reveals that the share of total income of younger single seniors (under 75) from C/ QPP of 18% in 1991 exceeded that from private pensions (17%); the corresponding gross income share from C/QPP (13%) for those 75 years of age and over was slightly less that from private pensions (14%).

The analysis in the background studies reveals that for seniors without C/QPP, the proportion of seniors' income derived from OAS/GIS is higher since more of them are eligible for GIS.

This analysis suggests that public pensions (C/QPP and OAS/GIS) continue to be a very important source of income for seniors, and C/QPP payments provide a significant proportion of this income. Also, there has been a significant increase over time in the relative importance of earnings-related pensions, both C/QPP and private.

This analysis does not consider the imputed income represented by the wealth of seniors, e.g., investments in owner-occupied mortgage-free housing.

EXHIBIT III-4

Changing Share of Gross Income by Source,
1981, 1991 Census Family Single Seniors (CF=1) and Couples (CF=2)
(Percentages)

Income Source	Single Men 65+		Single Women 65+		Couples Both 65+	
	1981	1991	1981	1991	1981	1991

C/QPP	10.8	18.2	7.5	15.0	9.6	17.1
OAS/GIS	32.7	30.9	42.2	39.3	32.7	28.5
Private Pensions	15.4	20.2	9.0	14.1	11.7	20.2
Investments	26.1	18.0	30.5	22.4	26.8	21.8
Other*	15.0	12.7	10.8	9.2	19.2	12.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Statistics Canada, Survey of Consumer Finances Data. Note: *The "Other" category refers to such income sources as capital gains, and earnings and benefits from provincial/territorial assistance programs.

EXHIBIT III-5

Changing Incidence of Gross Income by Source, 1981, 1989 Census Family
Single Seniors (CF=1) and Couples (CF=2), Those Under the (1986-based) LICOs
(Percentages)

	Single Men 65+		**Single Women 65+**		**Couples Both 65+**		
	1981	**1989**	**1981**	**1989**	**1981**	**1989**	
C/QPP	52.0	63.8	31.0	42.7	61.7	67.7	
OAS/GIS	97.8	96.0	98.4	96.2	98.6	95.6	
Private Pensions	18.1	7.6	12.5	14.6	27.3	11.5	
Investments	44.9	29.7	44.0	36.6	54.7	44.1	

Source: Statistics Canada, Survey of Consumer Finances Data

3.2.3 Benefits and Low Income

The Old Age Security Evaluation carried out in 1992 revealed that about 64% of senior single men, 43% of senior single women and 68% of senior couples under the Statistics Canada 1986-based Low-Income Cut-Offs (LICOs)[20] received a CPP pension in 1989 (Exhibit III-5). These are smaller proportions than the averages for senior men (80%), women (68%) and couples (90%) in 1991 (Exhibit III-3). The sources of gross income of seniors below the LICOs are summarized in Exhibit III-6.

The share of gross income from C/QPP was approximately 19% for lowest-income single senior men, 12% for lowest-income single senior women, and 13% for lowest-income couples under the LICOs in 1989. This compares with lower proportions in 1981 of 12% for such single men, 7% for single women and 11% for couples. Only a small proportion of the income of these singles and couples was obtained from private pension or investment sources (4% to 6% in 1989).

OAS/GIS provides the single most important source of income to lowest-income seniors. OAS/GIS receipts accounted for 67% to 72% of the total incomes of single seniors, and for 71% of that of senior couples, below Statistics Canada's LICOs in 1989. Nevertheless significant proportions (43-68%) of these lowest-income seniors receive C/QPP payments.

3.2.4 Impact on Net Income

The effect on individual net (after tax or disposable) income attributable to CPP depends not only on the level of CPP benefits but on the interactions between CPP benefits and the other components of the tax-transfer system. It depends on how it is measured, whether the CPP is seen as "first payer" or "last payer" in the seniors' benefit system. These terms refer to the location, or stacking sequence of complementary benefits, in the system of tax-benefit provisions for seniors. The location of the CPP determines the effective tax rate applied to benefits and hence to the net value added to disposable income:

✔ The "first payer" value is the amount which the CPP adds to disposable income before other benefits and tax allowances are factored in. It is calculated at the effective tax rates which seniors would face if they did not have special age-related benefits and tax allowances (OAS/GIS, tax credits).

✔ The "last payer" value is the amount which the CPP would add to disposable income if it were paid after adjusting for the senior-specific taxes and offsets (tax credits, costs of complementary programs like GIS) induced by the CPP benefit. It is calculated as the effective tax rate generated by the entire tax-benefit system, or that which seniors actually face. Last payer values measure the net cost of the CPP to governments, to plan contributors and to taxpayers generally.[21]

EXHIBIT III-6

Changing Shares of Gross Income by Source, 1981, 1989 Census Family
Single Seniors (CF=1) and Couples (CF=2), Those Under the (1986-based) LICOs
(Percentages)

Income Source	**Single Men 65+ 1981**	**1989**	**Single Women 65+ 1981**	**1989**	**Couples Both 65+ 1981**	**1989**
C/QPP	12.0	18.6	7.3	11.6	11.0	12.8
OAS/GIS	65.3	67.4	71.0	72.3	70.8	70.5
Private Pensions	5.4	2.0	3.5	3.0	4.9	2.6
Investments	9.7	5.0	11.2	6.1	6.6	3.7
Other	7.6	7.0	7.0	7.0	6.7	10.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Statistics Canada, Survey of Consumer Finances Data

For example, if a GIS recipient faces a marginal income tax rate of, say 30% as well as the 50% GIS benefit reduction rate (for every dollar of private or CPP pension income, GIS payments are reduced $0.50), the following are the effects: at first payer values, an extra $1,000 of CPP income adds $700 to disposable income after taxes are paid; but at last payer values, the extra $1,000 also reduces GIS payments by $500, for a net impact on disposable income of $200. Thus 20% ($200) of the gross CPP payment would be added to disposable income at last payer values. This compares with $700 at first payer values. At first payer values, the income tax rate on CPP is 30%, but at the last payer values, the combined effective tax rate on the CPP is 80% in this example.

The analysis that follows is based on first payer values. This is because first payer values are the relevant

criteria of objective achievement in the context of net income shares analysis. First payer values are the appropriate indicator of how effectively the program meets its objectives, since there is a logical consistency between the first payer approach and the view that:

✔ people should provide for their own retirement by saving or contributing to pension plans from their employment earnings; and

✔ that the state will insure some minimum level of income for seniors who have been unable to accumulate an adequate retirement income, through transfer programs like GIS and OAS.

Exhibit III-7 sets out examples of values added to disposable income for those receiving one-half the maximum, and the maximum CPP pension benefit in 1993. The exhibit also shows the impact of net CPP payments on seniors' disposable income, i.e., net CPP payments as a percentage of disposable income.[22] Examples are selected to show the effect of four senior-specific income-tested benefits and allowances. In these calculations, CPP is the first payer, tax credits are the second payer, GIS is the third payer, and OAS is the last payer.[23] Different levels of private income are assumed.

This analysis does not take into account provincial programs and surcharges, but includes the full age credit reduction announced in the budget of February 1994. Single seniors can be in different effective marginal tax rate ranges depending on their income level. The analysis focuses mainly on single seniors, but the same principles apply to senior couples.[24] The combined effective tax rates on an extra dollar of income for a single senior would be as high as 77% and as low as 26% for the single senior in 1993, depending on the income ranges depicted in Exhibit III-7. Total (federal plus provincial) taxes are assumed to be 157.5% of basic federal tax when the 3% surcharge applies, and 162.5% when the 8% surcharge applies.

For a single senior in the "OAS repayment or clawback" range ($53,215 to $83,789 in 1993), the net value of CPP (or net CPP payments as a percentage of disposable income) is about 10% of the net income when receiving maximum CPP ($8,008), and about 5% when receiving half maximum CPP ($4,004) in 1993, with private income of $56,058.

In the "age credit reduction" range ($24,912 to $49,134), half the maximum CPP benefit ($4,004 in 1993) and the full CPP benefit ($8,008) accounted for 12% and almost 20%, respectively of disposable income, with private income of $21,000. In the "GIS only" range (up to $13,516), half of the maximum CPP represents 31% of net income with private income of $1,000.

On the other hand, in the CPP recipient in the "GIS plus tax" overlap range, the maximum and half the maximum CPP accounted for 43% and 26%, respectively, of disposable income, with private income of $4,004.

This analysis indicates that the CPP makes a major contribution to the disposable income of seniors, particularly to those at lower income levels. Seniors with gross income levels at and below the Year's Maximum Pensionable Earnings (YMPE) of $33,400 in 1993 are more likely to benefit than those whose income is above it (Exhibit III-7).

3.3 EARNINGS REPLACEMENT RATES

The focus is retirement income as a percentage of pre-retirement earnings, specifically what earnings

replacement rates for disposable as well as gross income are provided by the CPP and by the seniors benefit system[25]. At inception the replacement objective was that maximum CPP benefits would equal 25% of average pensionable earnings[26], after a ten year transitional period (1966-75).

EXHIBIT III-7

Effect on Disposable Income of Full and Half Maximum CPP in 1993
at Selected Income Levels: Single Senior

				Impact on Disposable Income	
Income Range	**Private Income**	**CPP**	**% of Gross CPP Payment Added to Disposable Income**		**Net CPP Payments as % of Disposable Income**
GIS only ($0-12,843)	$1,000	$4,004	100%		31.2%
GIS+Tax ($12,844-16,898)	$4,004 $4,004	$4,004 $8,008	90.2% 82.3%		26.0% 42.8%
Age Credit Reduction ($24,912-49,134)	$21,000 $21,000	$4,004 $8,008	72.6% 63.8%		11.9% 19.3%
OAS Repayment ($53,215-83,789)	$56,058 $56,058	$4,004 $8,008	58.1% 54.9%		5.3% 9.7%

Source: Chapter I of the Paul Dickinson Study

Maximum CPP and full OAS ($900 per annum, or 18% of average earnings of about $5,000 in 1966) together would have replaced 43% of average earnings (which approximates the Year's Maximum Pensionable Earnings for the CPP, -the YMPE) for a single earner at the average wage at the inception of CPP. In 1993 the $12,594 combined annual maximum OAS and CPP was 38% of the YMPE ($33,400).

The CPP was designed to complement the OAS program as it then existed; to encroach not unduly upon the role of private pension vehicles as they then existed; and to leave room for future expansion of private pension vehicles. These structural parameters were designed to link the CPP to the broader combination of pension and saving vehicles. It was expected that private pension plans would build upon the CPP and raise the overall replacement rate.

The evaluation therefore employs 43% of gross and disposable income, as the overall replacement rate from CPP/OAS/GIS and the seniors' tax credits. Since the GIS seems now at least as permanent as the OAS, the non-taxable GIS benefits were included in this assessment of how well the public system replaces pre-retirement income. Also employed for comparison purposes was 70% for public (CPP) and private pensions, tax credits and transfer income (OAS/GIS) sources[27], the replacement rate for many private pension plans.

Gross Income Replacement

Exhibit III-8 summarizes the estimated gross income replacement rates for a single individual in 1993 for

the seniors' benefit system as a whole, and for the CPP separately, under alternative assumptions about the level of the CPP pension (full or half CPP pension) based on years of contribution, and for pre-retirement earnings (50%, 100%, and 150% of YMPE or average wage). For purposes of analysis it is assumed that recipients have no income other than CPP and OAS/GIS in retirement.

The combination of maximum CPP benefits and OAS/GIS (and tax credits) replaces 43% of gross earnings at the average wage (YMPE) of $33,400 in 1993 before retirement, for a single senior with no non-transfer (private pension or other) income in retirement. This would be approximately the pre-retirement earnings replacement rate for an individual retiring in 1993, who was fully employed for the entire 26 years when the CPP was in operation (1966-92), and who had earned the average wage during his/her working life. The maximum CPP by itself replaces about 24% of pre-retirement disposable income at the YMPE average earnings for the same individual since this replacement rate is built into the benefit calculation[28].

For someone with pre-retirement gross earnings at 50% of the average wage (YMPE) and no private or other income in retirement, half the maximum CPP pension benefit combined with OAS/GIS payments (and tax credits) increases gross replacement to 74% of pre-retirement gross income levels. CPP by itself replaces 24% of gross income at 50% of the average wage (YMPE) pre-retirement earnings. For a single senior with no private pension or other income in retirement and in receipt of 150% of the average wage before retirement, the maximum CPP pension plus OAS/GIS (and tax credits) replaces only 29% of pre-retirement gross income, with CPP replacing 16% of the latter.

In summary the pre-retirement gross earnings replacement rate provided by the CPP, together with the OAS/GIS programs and the seniors' tax credits generally meets (and exceeds) the evaluation criteria of 43% for OAS/GIS plus CPP, for most income levels at and below average wage. It exceeds 70% for lower-income earners up to 50% YMPE pre-retirement earnings.

Disposable Income Replacement

The goal of earnings' replacement is to prevent an undesirable reduction in living standards on retirement. Since replacement of disposable income is a more relevant indicator than replacement of gross income, it was also employed. Exhibit III-9 sets out the estimated disposable income replacement rates for a single individual in 1993 for the seniors' benefit system as a whole, and for the CPP separately, under the same assumptions about the level of the CPP pension (full or half CPP pension) and for pre-retirement earnings (50%, 100%, and 150% of YMPE) as for gross income replacement (Exhibit III-8). Disposable income before retirement consists of earnings and the Goods and Services Tax (GST) credit, minus income taxes and employee shares of CPP and Unemployment Insurance (UI) withholdings.

EXHIBIT III-8

Gross Income Replacement Rates by the System (CPP, OAS/GIS, Tax Credits),
and by CPP Alone Under Alternative Pre-Retirement Income Levels, and CPP Pension Levels,
Single Seniors, 1993

Pre-Retirement Gross Income		Years of Maximum CPP Contributions (no drop-out)	System(CPP, OAS/GIS, TAX CREDITS) Replacement Rate %	CPP Replacement Rate%
Amount $		**% Average 1993 Wage** (c)		
$16,700	50%	13 (a)	73.9	24.0
33,400	100	13 (a)	37.0	12.0
33,400	100	26 (b)	43.0	24.0
50,100	150	26 (b)	28.6	16.0

Source: Tables E.6 and E.7, Appendix VII of Paul Dickinson's study.
(a) Senior retires at half maximum CPP pension in 1993 and contribution period is 13 years;
(b) senior retires at maximum CPP pension in 1993 and the contribution period is 26 years;
(c) the 1993 average wage approximated the CPP's Year's Maximum Pensionable Earnings.

EXHIBIT III-9

Net Income Replacement Rates by the System (CPP, OAS/GIS, Tax Credits),
and by CPP Alone Under Alternative Pre-Retirement Income Levels,
and CPP Pension Levels, Single Seniors 1993

Pre-Retirement Gross Income		Years of Maximum CPP Contributions (no drop-out)	System (CPP,OAS/GIS, TAX CREDITS) Replacement Rate %	CPP Replacement Rate %
Amount $		**% Average 1993 Wage** (c)		
$16,700	50%	13	90.5	29.4
33,400	100	13	51.0	16.6
33,400	100	26	56.3	31.5
50,100	150	26	40.6	22.7

Source: Tables E.6 and E.7, Appendix VII of Paul Dickinson's study. See footnotes for Exhibit III-8.

Disposable income after retirement consists of CPP, OAS/GIS, the GST credit, less income taxes. The CPP replacement rate on net income is calculated at first payer values and recipients have no income other than CPP and OAS/GIS. Total federal-provincial income taxes are 157.5% of basic federal tax.

The maximum CPP benefits and OAS/GIS (and tax credits) replaces 56% of net earnings at the year's

maximum pensionable earnings (YMPE) of $33,400 in 1993 before retirement for a single senior with no other income in retirement. The maximum CPP by itself replaces about 32% of pre-retirement disposable income at the YMPE average earnings for the same individual. It meets the evaluation replacement rate criteria for the system as a whole of 43%.

For someone with pre-retirement gross earnings at 50% of the YMPE and no other income in retirement, half the maximum CPP pension benefit combined with OAS/GIS payments (and tax credits) increases net income replacement to 91% of pre-retirement levels. In this case the first payer value of CPP represents about one-third of the total net replacement with two-thirds from OAS/GIS.

The differences between gross and disposable income replacement rates arise because of the following: GIS benefits are non-taxable; seniors do not contribute to CPP or UI; and there are special tax allowances for seniors (the age credit and the $1,000 private pension allowance); and the OAS/GIS program, particularly the non-taxable GIS component, has a significant impact on gross and net income replacement rates for lower income seniors.

The pre-retirement gross earnings replacement rate for CPP and the OAS/GIS programs and seniors' tax credits exceeds 43% for gross income levels at and below the average industrial wage for a single senior. It replaces 56% of the disposable income of the same senior. The overall seniors benefit system exceeds a 70% overall replacement rate at most earnings levels below the average wage (or YMPE). But at the average wage (YMPE) the system falls short of 70% by about 14 percentage points, unless beneficiaries have income from other sources[29].

3.4 RATES OF RETURN

Generational and individual rates of return were compared based on lifetime contributions to the Plan. While generational rates of return are most often used, they can result in misperceptions as to the actual returns on contributors' investments in their CPP retirement pensions. The use of individual rates of return offer the advantage of focusing on the pension investment component of CPP. These are likely of greater interest to individual pensioners seeking to maximize their returns on their CPP retirement pension contributions.

Generational rates of return were calculated for cohorts (groups) of employed individuals born in the same year who contribute to CPP for the same period of time. Individual rates of return were calculated for a member of a cohort of individual employees born in a certain year and assuming different ages at death.

3.4.1 Generational Rates of Return

The evaluation reviewed generational rates of return on CPP as a whole calculated by the Chief Actuary, Office of the Superintendent of Financial Institutions (OSFI) and by other researchers. The rates of return are for representative generations born in specific years, rather than for individual contributors within generations.

Exhibit III-10 summarizes the nominal internal rates of return (IRRs)[30] projected by the Chief Actuary, OSFI, for various generations using the CPP's past and projected contribution rates and the assumptions of the CPP *Fifteenth Actuarial Report*, together with ratios of present values (PVs)[31] calculated by other analysts (the rows with the years in parentheses). These calculations are based on gross costs and benefits.[32]

Generational rates of return have created misperceptions which jeopardize a fair assessment of the CPP's projected costs and contribution rates. The press has widely reported that people born in 2000 will receive about 80 cents in benefits for each dollar they contribute over their lifetime[33]. This has created a popular perception that today's young generation, and generations not yet in the labour force, will have a negative rate of return on their CPP contributions.

The "80 cents on the dollar" is an incorrect interpretation of a statistical estimate (obtained by using an arbitrary rate of interest of 8%) that the "present value of benefits" will be 80% of the "present value of contributions" (for the 2000 generation):

✔ The ratio of the present value of benefits to contributions (in this case 0.8) has been interpreted as if it were a ratio of dollar benefits to dollar contributions. The two are entirely different;

✔ Present values assume a positive interest rate, so a present value ratio less than one (i.e., 0.8 in this case) does not mean a negative rate of return. It does not mean that the rate of return is 80% of one's contribution. Rather it means that the rate of return is less than the assumed interest rate of 8%.[34]

Generational internal rates of return stabilize at about a 5% nominal rate (1.5% real rate) for later generations, 2002 onwards, and between 6% to 7% nominal (2.5% to 3.5% real assuming a 3.5% annual rate of inflation) for current contributors under 30 years of age. The real internal rates of return for contributors born after 1982 would be approximately 1.5%, based on the 3.5% inflation assumption of the CPP Fifteenth Actuarial Report. The 5% nominal rate of return for later generations is consistent with the ultimate projected rate of increase in total employment earnings resulting from a population increase of 0.5 percent per annum, and an assumed rate of increase of 4.5% per annum in average employment earnings.

The generational rate of return is an average for all members of that generation; it incorporates the probabilities of occurrences for that generation of disability, early retirement, age of death, etc.. No individual member of the generation necessarily realizes the average return. Some will get a higher rate of return, others a lower rate of return.

EXHIBIT III-10

Annual Rates of Return to the CPP by Generation

Year of Birth	Start of Contributory Period	$ Benefit to $ Contribution Ratio	Internal Rates of Return	Ratio: Present Value Benefits to PV Costs**
(1920)				7.0
1922	1966	30.69	19.6%	
1942	1966	14.95	11.1%	
(1960)				2.6
1962	1980	7.52	7.38%	
1972	1990	6.15	6.18%	
(1980)				1.0

1982	2000	5.54	5.36%	
1992	2010	5.31	4.94%	
(2000)				*
2002	2020	5.34	4.87%	
2012	2030	5.41	4.96%	
2022	2040	5.42	5.04%	
2032	2050	5.36	5.08%	

*Source: Chapter IV, Dickinson. *This 0.8% IRR has been misleading.**Discount rate of 6%, except for 2000, 8%.*

The IRR is unencumbered by assumptions about the next best alternative investment, or about highly uncertain future interest rates. As well, direct comparisons of financial returns on alternative investments can be made by comparing the estimated IRR for each alternative.

Differences Across Generations

Early generations of CPP contributors, including those currently receiving the retirement pension, earn between 10% and 20% return on their contributions. Although these rates of return are much higher than can be expected for later generations, most of the difference is not caused by demographic change.

High rates of return for early generations are a largely unavoidable by-product of phasing in any public plan with PAYGO-type funding. The CPP was phased in over a ten-year period from 1966 to 1976. Someone who started contributing in 1966 at age 55 could retire on full pension at age 65 in 1976. Later generations have to contribute up to 40 or 47 years (after factoring the 15% "drop-out" provisions) to receive the full pension.

Contrary to some perceptions, however, the phase-in process has little effect on rates of return for future generations (including today's younger contributors). The Chief Actuary estimates the phase-in period will have no effect on PAYGO contribution rates by 2005. If all people on partial benefits, because of the phase-in, were paid full benefits, it would add only about 0.04 percentage points to the contribution rate in the year 2000, and 0.01% in the year 2005. By 2005 the person retiring at age 65 in 1976 would be 95 years old. Later generations pay higher lifetime contribution rates because the phase-in period is over, mortality rates improve and life expectancy increases, and fertility rates decline.

3.4.2 CPP as a Retirement Pension Investment by Individual Contributors

Contributions to the CPP have both an insurance component (against contingencies like death or disability) and an investment component (like investment in retirement pensions). Rates of return to whole generations do not distinguish between the insurance and investment functions of the CPP, thereby underestimating the true rate of return to individuals who reach retirement age. The rational individual would want to maximize returns on the investment component but not on the insurance component of the CPP. In the case of the latter such insurance is against the risk of something which they hope will not occur.

Individual support of the program can be radically affected by what the contributor perceives to be his or her individual rate of return. From the contributor's perspective, individual rates of return on the pension

component of the CPP should be more relevant than generational rates of return on the whole CPP investment. Each individual's own expectations as to what his or her CPP pension will yield, should determine overall support for the CPP, and willingness to pay the projected contribution rates.

Rates of return were derived for CPP contributions for individuals with identical demographic characteristics for three generations (born in 1974, 1992 and 2020) in the 17% and 26% federal tax brackets contributing at YMPE and 50% YMPE earnings. These calculations do not take into account the employer's contribution to CPP[35] and apply to both males and females.[36] The analysis was for a senior in the 17% federal tax bracket where the gross and after tax rates of return are the same (contributions and benefits are subject to the same effective marginal tax rates) and for those in the next higher federal tax bracket (26%).

Exhibit III-11 compares the nominal individual rates of return for the generation born in 1974 at different ages and with different ways of measuring the "cost" component of rates of return (rates on all contributions versus rates on the retirement-only component), for the employee at YMPE, at the 17% federal tax bracket for the self-employed, with and without the 15% drop out.[37]

EXHIBIT III-11

Lifetime Annual Percentage Rates of Return for Representative Individuals
for the Generation Born in 1974 at the 17% Federal Tax Bracket

			EMPLOYEE AT YMPE EARNINGS			
Age at Death		**Return on All Contributions (No Drop-out) CONT[a)] PAYGO**		**Retirement-Only[b)] Return at PAYGO**	**Self-Employed At YMPE Earnings Without Drop-Out At PAYGO**	
		Without Drop-Out	**With Drop-Out**			
95	7.5		7.3	8.4	9.2	6.4
90	7.2		7.0	8.2	9.0	6.1
85	6.8		6.5	7.8	8.6	5.6
80	6.0		5.8	7.2	8.0	4.7
75	4.7		4.6	6.1	6.8	3.3

Source: Chapter IV of the Paul Dickinson Study and supplementary analysis.
Notes:
(a)[0]The "CONT" column refers to the CPP current and projected contribution rates by the Chief Actuary of the Office of Superintendent of Financial Institutions in the CPP Fifteenth Actuarial Report.
(b)[0]The "retirement only" CPP return is the return on the contributions needed to pay for each year's retirement benefits, excluding non-pension or ancillary benefits and administration costs). Retirement is assumed to be the age of 65, and people die at the end of the age (year of death) shown.

(c) Gross and net rates of return are the same at the 17% federal tax bracket.

The findings of this analysis indicate that:

✔ Isolating for the insurance components shows that the individual rate of return to "investing" in CPP retirement pensions is higher than the return which treats all CPP contributions as an investment. The estimated return on the retirement pension component of the PAYGO rate for current younger contributors when they reach retirement age (1974 generation) increases by between 12% and 24% depending on how long they live. These are nominal rates of return before removing the effect of inflation (real rates of return would be lower than the nominal rates of return).

✔ The CPP Pension-only Pay-As-You-Go (PAYGO) nominal rates of return would be in the 7.8% to 8.6% range (between 4.3% and 5.1% real, or about 4.7% assuming a 3.5% annual rate of inflation) for someone in the 17% federal marginal tax bracket who retired at the age of 65 and died at 85 years of age.

✔ For those at the 26% federal marginal tax bracket individual rates of return would be marginally lower than in the 17% tax bracket. For example at this tax bracket the individual rates of return on the CPP pension component with no drop-out would be 5.3% (or 86% of the return in the 17% federal marginal tax bracket) at the age of death of 75 and 7.1% (or 91% of the return in the 17% federal marginal tax bracket) at the age of death of 85.

✔ As would be expected the rates of return for the self-employed are 2-3 percentage points lower than for employees since they pay both the employee and employer contributions, especially at shorter benefit durations. The nominal rates of return on the retirement pension component for a self-employed individual (who pays both the employee and employer CPP contributions), who retired at 65 and died at 85 years of age, would be about 5.5% (2% real) without drop-out, compared to 7.8% for an employee without the drop-out.

This analysis found that the 1992 and 2020 generations have slightly lower rates of return than the 1974 generation (about 11% to 16% on the retirement benefit component for someone who dies at the age of 85).

A comparison of generational CPP internal rates of return with that for individuals within generations is not statistically appropriate.

Nonetheless, it is noted that for individual seniors in the 1974 generation in the 17% federal bracket after retirement (where the gross and after-tax rates of return are the same) and no election is made to "drop-out" of non-earning years, the rates of return on individual CPP (PAYGO) retirement pension and non-pension components begin to exceed the approximately 6% generational rates of return for the 1972 generation (Exhibit III-10), between the ages 80 and 85 for the full PAYGO rate, but at the age 75 for the retirement pension component (Exhibit III-11). For the same generation, the individual PAYGO "pension only" rate of return at age 80 without the drop-out provision (8% in Exhibit III-11) is about one-third greater than the generational rate of return (approximately 6% in Exhibit III-10).

For seniors in the 26% federal tax bracket, the difference in tax treatment of benefits and contributions makes the after-tax rate of return on the CPP contributions less than that for seniors in the 17% tax bracket (between 0.6 and 0.9 percentage points for the 1974 generation).

Other findings from this analysis which have implications for individual rates of return include the following:

✔ The Year's Basic Exemption increases the rate of return for the contributor at 50% of YMPE earnings by significantly more than for the YMPE earnings level contributor. Much commentary and analysis tends to focus on the YMPE contributor, which ignores the effect of interpersonal transfers created by the Year's Basic Exemption;

✔ Retirement at age 60 increases the rate of return on CPP contributions. Late retirement at age 70 decreases it, except for those whose benefit duration is longer than average.

CPP offers a higher rate of return for women than for men, because women have a longer life expectancy.

Comparisons with Private Plans

The evaluation did not carry out an explicit comparison of the rates of return on the CPP with rates of return in other pension vehicles (RRSPs, RPPs, Registered Retirement Investment Funds -RRIFs ,etc.). This would have required comparisons of the true differences in risk, portability, protection against non-anticipated inflation, etc. Consistent comparison can only be made with other plans which offer similar combinations of investment and insurance functions.

Because the CPP retirement pension is to a great extent investment risk-free[38], the rate of return on the retirement component should be compared with guaranteed returns in the private sector. Rates of return which have been realized on more risky investments in the past are not valid evaluation criteria. The comparison that would be appropriate is with risk-free or nearly risk-free investment portfolios. But there are few guaranteed returns in the private sector; most funded pension plans are based on portfolio policies that involve some degree of risk. Also many RRSPs are converted to RRIFs, often self-directed, and the return is not guaranteed.

Although not strictly comparable it is interesting to contrast the return on CPP retirement pension-only investment with the return on various forms of private investment instruments. Nominal rates of return over the period, 1966-93, have been estimated at 9.9%, 8.7%, 10.7%, and 9.0% for Canadian stocks, long bonds, mortgages, and treasury bills, respectively[39]. The corresponding real rates of return for Canadian stocks, long bonds, mortgages, and treasury bills were estimated to have been 3.8%, 2.6%, 2.6%, and 2.9%, respectively; these returns would have to be reduced by 1-1.5% each to reflect the administrative and investment expenses that would be associated with using them to provide retirement income. This compares with an after-tax nominal rate of return for the CPP pension component for the employee as contributor of 6.1% and 7.8% at ages of death of 75 and 85, respectively, without drop-out. The CPP returns quoted earlier are net of administrative and investment expenses.

Individual support for the program can be significantly affected by what the contributor perceives to be his or her individual rate of return.

3.5 CONCLUSIONS

✔ CPP beneficiaries rose about 10 times between 1971 and 1991 while the value of benefits rose about 134 times in nominal terms. Data for 1993 reveals that the number of beneficiaries from CPP pensions approximated 2.1 million, with pension benefits amounting to about $9.2 billion.

✔ C/QPP pension benefit payments supply an increasingly important portion of the gross income of senior target groups (single men, single women, couples). They also make an important contribution to their disposable income.

✔ C/QPP benefits also make an important and rising contribution to the gross income of seniors under the Statistics Canada Low Income Cut-offs (LICOs).

✔ The pre-retirement gross earnings replacement rate for CPP and the OAS/GIS programs and seniors' tax credits exceeds 43% for all income levels at and below the average industrial wage. This was what the maximum CPP benefits and full OAS would have replaced of gross income at the inception of CPP in 1966. It makes an even greater contribution to net income replacement (56%) and therefore exceeds expectations.

✔ Generational internal rates of return on CPP as a whole stabilize at about a 5% nominal rate (1.5% real rate) for later generations, 2002 onwards, and between 6% to 7% nominal (2.5% to 3.5% real) for current contributors under 30 years of age. CPP pension-only real rates of return would be about 4.7% for an employee in the 17% federal marginal tax bracket who retired at age 65 and died at age 85. A recently completed CPP affordability study by the Office Superintendent of Financial Institutions indicates that real rates of return for Canadian stocks, long bonds, mortgages, and treasury bills were 3.8%, 2.6%, 2.6%, and 2.9%, respectively, over the period 1966-93, and perhaps 1-1.5% less, once investment and administrative expenses are subtracted to make the values comparable to the CPP figures.

✔ Contrary to public perception (as reported in the press) the CPP contributions as a whole and pension-only employee contributions generate reasonable rates of return. Employee rates of return to CPP pension-only PAYGO contributions are significantly higher than the generational returns on the whole CPP contribution. The return on the CPP pension is enhanced by its risk-mitigating characteristics, such as the full portability of benefits, low administration costs, and protection against unanticipated inflation and the unlikelihood that the government sponsor will default.

TABLE OF CONTENTS

Chapter IV - Cost Effectiveness & Other Related Issues

This chapter summarizes the findings on cost-effectiveness and other related issues for this evaluation. Projected contribution rates are examined and the real costs of the CPP to contributors. This is followed by a review of the broader issues, especially the implications for the future operation and affordability of the CPP of potential future demographic, fiscal and economic concerns, the implications of the program for government general revenues and program costs and the significance and role of intergenerational transfers. A last section reviews the findings of econometric simulations carried out to estimate the effects on macro-economic variables and plan affordability of moving immediately to PAYGO rates and of higher future immigration levels.

4.1 CPP PROJECTIONS

It is a statutory requirement that projections of CPP benefits, contributory earnings and contribution rates be made at least every three years. Projections are necessary for sound planning, and the frequency of

projections injects flexibility into the CPP planning and management process. These CPP contribution rate projections for the first half of the next century have been a major source of concern and uncertainty about whether future working generations will be willing or able to "afford" the CPP in its current form.

Exhibit IV-1 shows the CPP (employer plus employee) contribution rates projected by the Chief Actuary, OSFI, in the CPP *Fifteenth Actuarial Report* of December 1993, and assuming the current schedule of CPP contribution rates were maintained. The most important assumptions underlying these projections are that average earnings (YMPE) increase at an annual rate of 4.5%, with inflation at 3.5%, to yield a real growth of 1% per annum.[40]

Exhibit IV-I illustrates the following trends:

✔ In the first half of the next century, ancillary benefits (disability and survivor benefits) paid and administration costs fall from over half (59%) of the annual cost of the retirement (PAYGO) pensions in 1995 to just over one-third (36%) in 2050. This occurs because these benefits have flat-rate calculated components, as well as earnings-related ones, which are indexed to inflation (3.5% per annum), or to 1% less than the earnings growth rate (4.5% per annum) in benefit levels.

EXHIBIT IV-1
Projected Future CPP Contribution Rates

				CPP CONTRIBUTION RATES			RATIOS		
		PAYGO[b)]		CONT[a)] -RATE		A/E[d)] Ratio		RATE/PEN[e)]	CONT/[a)] PAYGO	
	PEN[c)]		TOTAL					PAYGO	CONT	
1995	4.9		7.80		5.4	2.32		1.59	1.10	0.69
2000	5.05		8.25		6.6	1.52		1.63	1.31	0.80
2010	6.17		9.89		8.9	0.45		1.59	1.44	0.91
2030	10.46		14.22		15.43	0.58		1.36	1.48	1.09
2050	10.35		14.11		14.37	1.96		1.36	1.39	1.02

Source: Canada Pension Plan, Fifteenth Actuarial Report, OSFI, 1993, released February 13, 1995, and as per the current rate schedule (Main Table 1 A)
Notes:
(a)The "CONT" columns are the projected CPP contribution rates of the Chief Actuary, OSFI, under the existing federal-provincial agreement which fixes contribution rates for 25 years (1992-2016). These rates can be revised after the regular federal-provincial quinquennial reviews by Ministers of Finance. The next review of contribution rates must occur prior to 1997.
(b) The Chief Actuary, OSFI, also estimates PAYGO contribution rates. The PAYGO rate is the schedule of contribution rates which in each year would raise revenues sufficiently to pay for that year's benefits and administrative costs.[41] *(c) The retirement pension component PAYGO rates, "PEN", are those derived from the ratio of annual retirement pension benefits to contributory earnings and excluding the cost of ancillary benefits, interest revenue and change in the account.*
(d) The account/expenditure (A/E) ratio is the ratio of funds in the CPP Account (A) to the annual costs

of all CPP benefits plus administration cost (E).
(e)The RATE/PEN columns are the full PAYGO or full CONT rates divided by the pension-only component of the PAYGO rate.

✔ Under the current contribution rate schedule the Account/Expenditure ratio falls from 2.3 in 1995 to about zero in 2015, and remains negative until 2022. Thereafter, because of the Fifteen Year Formula the ratio rises to 0.58 in 2030 and 1.96 in 2050. The projected contribution rate rises by 6.53 percentage points (from 8.9% in 2010 to 15.43% in 2030). The current contribution rates were set to increase at a faster rate than the PAYGO schedule in order to build up a bigger CPP fund, thereby smoothing future contribution rate increases after 2016, when the Fifteen Year Formula will set the rates.[42]

Sensitivity analysis[43] did reveal that projected CPP contribution rates are somewhat sensitive to the real rate of increase in average earnings (economic growth). In the next section the effects of both future contribution rates and economic growth on disposable income are examined.

4.2 AFFORDABILITY FROM THE STANDPOINT OF THE INDIVIDUAL CONTRIBUTOR

The evaluation addressed program affordability from the individual contributor's perspective in the following manner:

✔ the effect of projected contribution rates on the real disposable incomes of individuals in future generations of contributors. Change in real disposable income (RDI) is a measure of future contributors' "ability to pay" the higher rates, while maintaining or improving standards of living relative to current contributors; and

✔ the effect of higher CPP contributions on the total withholdings rate from earnings of future contributors (the effective tax rate). This can affect the individual's "willingness to pay" higher contribution rates if they are seen as just another "tax" on current income, rather than as an investment in future income.

These evaluation findings respond to the evaluation question "Do projected increases in contribution rates and benefit payments threaten the "affordability" of the CPP in its current form?" (Terms of Reference, Question, B.4). It also addresses in part the question, "Do fiscal and demographic and economic concerns about the future argue for changing the way in which the CPP is funded?" (Terms of Reference, Question, B.5). Concerns about the ability of future economic growth to accommodate the rising cost of CPP are explored in this section. Concerns about labour force growth and dependency ratios and funding issues are explored in Section 4.4.

4.2.1 Real Disposable Income: Treating CPP Contributions as a "Tax" on the Individual Contributor

The concern has been expressed that C/QPP gross costs may rise from 2.3% in 1992 as a proportion of gross domestic product to 4.5% in 2030 (*Finance Canada, unpublished estimate*). Moreover, between 1992 and 2030 projected employee contribution rates will increase by 222% (from 2.4% to 7.72% of contributory earnings) under the current rate schedule. What future contributors can "afford" depends on their disposable income, not on gross income or gross CPP contributions. The purchasing power of disposable income (after discounting inflation) depends on real economic growth, on income taxes, sales taxes, on contributions to programs like CPP and Unemployment Insurance. Real growth in average

earnings is assumed to be 1% per annum (i.e., a 4.5% nominal growth in average earnings and a 3.5% inflation rate).

The focus of the analysis is the employee, who pays one-half of the CPP contribution rate because the vast majority of contributors are self-employed. The concern is with the impact of rising CPP contribution rates on the standard of living of contributors. Real disposable income is measured as earnings after personal income taxes and CPP contributions in 1995 dollars (and adjusted for projected inflation after 1995). These estimates are summarized in Exhibit IV-2.

The analysis contrasts the effects of higher contributions on real (after inflation) disposable income if tax allowances and tax brackets are indexed to average earnings growth (YMPE growth of 4.5% per year), or to full inflation pricing, FIP (3.5%).[44] It reveals the percentage increase in real disposable income between 1992 and 2030 under the two tax scenarios and under four alternatives for CPP: no CPP, and three different contribution rate schedules: holding contribution rates constant at the 5.4% rate of 1995 (or at a 2.7% employee rate), an increase in the rate to 10% by 2000 and maintaining it constant thereafter (or at a 5% employee rate), and the current CPP contribution schedule (CONT).

Total personal income taxes (including provincial taxes and federal surcharges) are assumed to be 157.5% of basic federal tax. Only the effects of the CPP and personal income taxes are taken into account. No assumptions are made about possible behavioral relationships between higher contribution rates and savings, labour supply or real growth. If tax rates are indexed at YMPE, real disposable income increases from 1992 levels under the projected rates:

- ✔ by 32.4% at YMPE gross earnings;
- ✔ by 33.6% at 50% YMPE gross earnings; and
- ✔ by 34.1% at 150% YMPE gross earnings (Exhibit IV-2).

Between 1995 and 2030, however, projected employee contribution rates increase by 186% (from 2.7% to 7.72%), reducing the growth in real disposable income at year's maximum pensionable earnings (YMPE) by only about 6.2% over the whole 35-year period (the difference between 38.6% at a 5.4% contribution rate and 32.4% at the scheduled or CONT rates).

With indexing to inflation (FIP in Exhibit IV-2), real disposable income still rises by 23.6% at YMPE, by 28.9% at 50% of YMPE, and by 26.1% at 150% of YMPE.[45] A zero growth rate would have reduced real disposable income at YMPE and with taxes indexed to average earnings growth (or YMPE) by about 3% between 1992 and 2030.[46]

The increase in effective average tax rates if tax allowances and tax brackets were indexed to average earnings growth and inflation are set out in Exhibit IV-3.

If income tax rates remain at 1992 levels (YMPE indexing), higher CPP contributions cause the proportion of employee earnings withheld in taxes plus CPP contributions to rise:

- ✔ 3.3 percentage points (from 25.8% in 1995 to 29.1% in 2030) at YMPE gross earnings;
- ✔ 2.9 percentage points (from 18.5% to 21.4%) at 50% of YMPE gross earnings; and

✔ 2.2 percentage points (from 30.8% to 33.0%) at 150% of YMPE gross earnings.

Inflation indexing would result in an increase in withholdings (the combination of income taxes paid and projected CPP contribution rates) of between 5.6 to 8.0 percentage points between 1995 and 2030, much lesser increases than the rise in real disposable income over 1995 levels (Exhibit IV-3).

EXHIBIT IV-2

Estimated Percentage Increase in Real Disposable Income (RDI)
of Contributors: 1995 to 2030

Tax Mode Indexing	Earnings Level	No CPP	5.4% Contribution Rate	10% Contribution Rate	CONT Contribution Rate
YMPE	50% YMPE	41.3	38.6	36.3	33.6
YMPE	YMPE	41.9	38.6	35.7	32.4
YMPE	150% YMPE	40.9	38.6	36.5	34.1
FIP	50% YMPE	36.6	33.9	31.6	28.9
FIP	YMPE	33.1	29.7	26.9	23.6
FIP	150% YMPE	32.9	30.5	28.5	26.1

Source: Chapter III of the Paul Dickinson Study and supplementary analysis.

EXHIBIT IV - 3

Effective Average Tax Rates
(Income Tax and Projected CPP Contribution Rates)
as a % of Different Gross Earnings Levels, 1995, 2030

				Tax Indexing to Average Earnings			
	YMPE		YMPE		150% YMPE		
Year	Inc. Taxes and CPP Contribution Rates	CPP Contribution Rates		Inc. Taxes and CPP Contribution Rates	CPP Contribution Rates	Inc. Taxes and CPP Contribution Rates	CPP Contribution Rates
1995	18.5	1.6		25.8	1.8	30.8	1.2
2030	21.4	4.5		29.1	5.1	33.0	3.4
				Tax Indexing to Inflation			
1995	18.5	1.6		25.8	1.8	30.8	1.2
2030	24.1	4.5		33.8	5.1	37.0	3.4

Source: Chapter III of the Paul Dickinson Study and supplementary analysis.

Even though inflation indexing increases the share of income paid in taxes, the standard of living of individual contributors in 2030 rises by between one-quarter and one-third of 1995 levels. The compounding effect of even modest annual real growth means that real disposable income can rise

despite higher CPP contribution rates. Over the periods 1992-2020 and 1992-2050, the growth rates of real disposable income also significantly exceed the growth in employee earnings withheld in taxes and CPP contribution rates.

These figures demonstrate that the effect of higher CPP contribution rates on the purchasing power of future contributors' earnings is minor compared with the effects of real economic growth, or the lack thereof.[47] If the country experiences a 1% real growth, the impact of the projected rise in CPP contribution rates should not threaten the "ability to pay" for the CPP benefits, other things being equal.

But if government (federal/ provincial/ municipal) program costs rise in the future above current levels to maintain other social benefits (welfare, education, unemployment insurance, health care, etc.) this might affect the affordability of CPP and other government programs. Some rising social program costs may be demographically-related (e.g., health care for the aging seniors population). The CPP's affordability might also be influenced by the need for higher future taxes to service or reduce government debt burdens, or to finance other government programs.

Under this real growth rate assumption (1% real growth per annum), and assuming no change in taxation (tax brackets and tax allowances indexed to average wages) the "ability to pay" for CPP retirement benefits should not be affected significantly as real disposable income should continue to rise, other things being equal. Projected contribution rates do not by themselves suggest that the CPP will become unaffordable. However, "ability to pay" for CPP could be affected by other factors such as: how much of future real growth (productivity gain) would be directed towards growth in personal disposable income and; the need to finance other programs and to service or reduce government debt. The evaluation does not examine the trade-offs between transfer programs, the CPP (an entitlement program) and tax benefits that might be implied in any government expenditure restraint (or reduction) climate in the future. Only some CPP-related current program and tax expenditure interaction effects are examined in Section 4.3.

4.2.2 Effect of the CPP on the Total Withholding Rate

Even if "ability to pay" rises over time, "willingness to pay" at a point in time could be affected by the share of gross income taken in withholdings (by the effective average tax rate) on account of the CPP and income taxes. The larger the proportion of disposable income withheld, the greater might be the potential pressures by contributors to reduce this investment in the CPP, in order to increase spending on current consumption.

The effect of CPP contribution rates on individuals' effective average tax rates is a combination of: the contributory earnings as a proportion of total earnings; the rate of tax relief on CPP contributions; and the CPP contribution rate. Exhibit IV-4 displays the ratios of contributory earnings to total earnings for selected earnings levels expressed as a proportion of Year's Maximum Pensionable Earnings (YMPE) before tax relief through the CPP tax credit.

EXHIBIT IV-4
Contributory Earnings as a Proportion of Total Earnings

	Ratio of Contributory Earnings To Total Earnings

Earnings as % YMPE	Ratio	Earnings as % YMPE	Ratio
20%	0.50	180%	0.50
50%	0.80	150%	0.60
100%	0.90	110%	0.82

Source: Chapter III of the Paul Dickinson Study

This exhibit reveals that the CPP contributory earnings vis-à-vis total earnings (the ratio) varies widely with the level of earnings. Variations in contributory earnings arise because maximum contributions are set by the year's maximum pensionable earnings (YMPE) less the year's basic exemption which is 10% of YMPE.

Exhibit IV-5 illustrates the percentage point increase in the employee's total withholding rate between 1995 and 2030 (after tax allowances, adding in the CPP credit for selected earnings), attributable to the increase in the CPP contribution rate from 1995 to 2030. This assumes total federal plus provincial income taxes are 157.5% of basic federal tax and tax indexing at YMPE (average wage).

EXHIBIT IV-5

Estimated Percentage Point Increase in the Combined Proportion of Earnings Taken in the Form of CPP Contributions and Income Taxes between 1995 and 2030, Caused by Projected Increase in CPP Contribution Rates

	Income Levels		
% of YMPE	Below YMPE	% YMPE	Above YMPE
20%	1.84%	180%	1.84%
50%	2.93%	150%	2.2%
100%	3.3%	110%	3.0%

Source: Chapter III of the Paul Dickinson Study
and supplementary analysis

The resulting increase in the effective average tax rate of the individual contributor at different levels of income is much less than the 5.02 percentage point increase in the employee CPP contribution rate (from 2.7% to 7.72% of contributory earnings). It is also substantially less than the 10.03 percentage point employer-employee increase in the total contribution rate generally reported in the press (from 5.4 to 15.43%).

4.2.3 Impact of the CPP on Real Disposable Income

Although real disposable income is projected to increase, the employee's share of the CPP contribution rate (7.72%) reduces the contributor's disposable income in 2030 using the current schedule of contribution rates as follows:

✔ at 50% YMPE, by 5.44% of the disposable income;

✔ at 100% YMPE, by 6.69% of disposable income; and

✔ at 150%YMPE, by 4.82% of disposable income.[48]

The effect of the increases in CPP contribution rates on the effective average tax rates is less under YMPE (average wage) tax indexing than under other forms of tax indexing (e.g., full inflation pricing). The impact of higher CPP contributions on the total future withholdings from earnings (the effective average tax rate) set out in Exhibit IV-5 must be viewed within the overall context of concurrent demands for other public benefits (e.g., health, education, etc.) in addition to CPP retirement pensions at that time.

The "willingness to pay" for CPP benefits in the future would be affected by the preference of citizens for CPP benefits vis-à-vis the benefits of other federal or provincial programs which may also rise in the future. The "willingness to pay" for CPP retirement benefits might also be more positively influenced by more accurate information on the real CPP contribution rates (after taking into account the Year's Maximum Pensionable Earnings and tax credits), the return on the CPP investment in a retirement pension (Section 3.4.2) and what is causing future rates to rise (Sections 4.4 to 4.6). The complete analysis of these topics is found in Chapters I and III, Appendix I, table set C, Appendix III and table set B, and supplementary analysis of the Paul Dickinson study.

4.3 THE NET COST OF THE CPP IN THE TAX-TRANSFER SYSTEM

The interaction effects between C/QPP and complementary federal programs like OAS/ GIS and with the federal-provincial income tax system have implications for the net cost to the federal-provincial governments of C/QPP. Some of these more important interaction effects are as follows:

✔ GIS costs are reduced by 50% of C/QPP payments. (If the C/QPP program were abandoned more in GIS benefits would be paid out);

✔ because of C/QPP payments, more of the OAS payments are subject to the repayment or 'clawback' (In the absence of C/QPP more in OAS benefits would be paid out);

✔ employee C/QPP contributions are eligible for the 17% federal marginal tax credit and corresponding provincial tax credit; employer contributions are generally treated as deductions for corporate tax calculations; and

✔ a large proportion of C/QPP benefits is recovered through federal-provincial income taxes.

The net cost of the C/QPP to the federal government is the gross benefit minus all induced increases in income taxes and induced reductions in the cost of other programs. Seniors generally face higher

marginal effective tax rates than non-seniors because of income-testing on GIS benefits, the OAS 'clawback' (social benefit repayment) range, and the new provisions to income-test the age credit.

The Simulation-Tabulation (SIMTAB) model[49] of Strategic Policy, HRDC, was used to estimate recoveries through higher federal-provincial taxes and lower costs of other federal government programs of providing C/QPP benefits as well as the impact on net government revenues from doing so. These simulations for the 1993 calendar year are based on actual 1993 federal and provincial tax rates. These findings are summarized in Exhibit IV-6.

The estimates show $5.70 billion of C/QPP benefits were returned to the federal government in higher tax revenues ($2.54 billion), lower OAS/GIS/SPA expenditures ($3.05 billion) and lower costs of other programs ($0.11 billion). This represents about 31% of the C/QPP expenditures in the fiscal year 1993 of $18.16 billion ($14.13 billion for CPP and $4.03 billion for QPP). Another $1.84 billion was returned to provinces in higher income tax revenues, for a federal-provincial total of $7.54 billion of lower federal program costs or federal-provincial tax recoveries (about 42% of C/QPP expenditures). On the other hand, C/QPP contributors received $1.78 billion in government tax credits in 1993.

EXHIBIT IV-6

Effect of the C/QPP on Government General Revenues, 1993

		Billions of Dollars			
Programs	**Returns to Federal Govt.**		**Returns to Provincial Govt.**		**Returns to Fed/Prov. Govt.**
		Quebec		**Other**	
OAS/GIS/SPA	3.05	-		-	3.05
Income Taxes	2.54	0.75		1.09	4.38
Other Program	0.11	-		-	0.11
Total	5.70	0.75		1.09	7.54
Less C/QPP Credit	1.12	0.26		0.40	1.78
Net Effect on Government General Revenues	4.58	0.49		0.69	5.76

Source: Chapter VIA of the Paul Dickinson Study

These calculations did not take into account the business tax costs attributable to C/QPP[50] which would have to be deducted from these tax recoveries. Neither does it take into account the induced reductions (savings) in provincial government payments through benefit programs like Ontario's GAINS-A, social assistance and disability benefit programs. Some other effects were not factored into the estimates which would have augmented these federal-provincial recoveries on account of the C/QPP program. Higher

government tax receipts on account of the new age credit provisions would have further increased the proportion of C/QPP benefits recovered through income taxes. As well, the possibility that without the C/QPP, more would be saved through other tax-assisted vehicles (RRSPs and RPPs), which have higher rates of tax relief than the C/QPP was not factored into these estimates.

Notwithstanding these omissions in the calculation of the estimates, these findings nevertheless indicate that the contributory CPP provides a significant return to government general revenues through either higher tax revenues or lower complementary program costs. The gross cost of the program ($14.13 billion for CPP and $4.03 billion for QPP in 1993) must be compared to what is eventually recovered by the governments, $7.54 billion in the same year or the net effect on government net general revenues ($5.76 billion) after the C/QPP tax credit is taken into account[51]; government tax recoveries and the reduced costs of other programs amounted to 32% of C/QPP gross program expenditures in 1993.

4.4 IMPLICATIONS OF DEMOGRAPHIC AND LABOUR MARKET TRENDS

These evaluation findings respond in part to the evaluation question "Do demographic and labour market concerns about the future argue for changing the way in which the CPP is funded?" (Terms of Reference, Question, B.5). The evaluation did not examine other important economic concerns about the future (e.g., the future fiscal environment).

Demographic and labour market factors which will influence the future costs of CPP are dependency ratios, labour force participation rates, the age of retirement and life expectancy.

Dependency Ratios

When the baby boomers enter retirement, the higher proportion of seniors will be offset by the smaller proportion of younger people and other dependents neither young nor old, keeping the proportion of the working age population (age 16 to 64) approximately the same as in the mid-1960s.[52] The dependency ratio[53] for seniors (age 65 and over) will have risen from about two to four persons for each 10 persons in the labour force between 1985 and 2025; this compares with an expected decline in the non-senior dependency ratio over the same period from 8 to 6 persons per 10 persons in the labour force.[54] (Exhibit IV-7)

However, the redistribution of the "dependent" population from young to old is seen as a cause for concern, because the government's per capita cost for seniors (e.g., medical costs, C/QPP and old age transfers, etc.) is higher than for the young. By 2030, with the baby boom largely retired, the rate of growth of the senior population will be greater than in other countries because Canada currently has a younger population. In this context the seniors' component of the dependency ratio is particularly important. In 1980, the proportion of seniors in Canada's population (10%) was significantly lower than the average for Organization for Economic Cooperation and Development (OECD) countries (12%), but will about equal the average in OECD countries in 2050 (21%).[55] The major challenge will not be the level of the seniors' dependency ratio, but whether and how Canada adapts to the increase.[56] Of particular relevance will be the proportion of employed people in the population, which will depend on labour force participation rates and unemployment rates.

EXHIBIT IV-7:

Dependency Ratios: Number of Seniors and Others, Per Person in the Labour Force

YEARS	AGED 65+	OTHER GROUPS	TOTAL
1965	0.21	1.54	1.75
1975	0.19	1.08	1.27
1985	0.21	0.80	1.01
1995	0.24	0.74	0.98
2005	0.25	0.68	0.93
2015	0.31	0.64	0.95
2025	0.39	0.63	1.02
2035	0.45	0.61	1.06

Source: Informetrica, "Canada Pension Plan Evaluation, Macro-Economics and Longer Term Economic Dimensions," Appendix F

Labour Force Participation

The labour force participation rates will be a critical factor in assessing the extent of the future burden posed by the CPP. Research studies indicate that:

✔ if participation rates of women grow to equal those of their male counterparts by 2021, the labour force dependency ratio (i.e., the number of people out of the labour force divided by the number in the labour force) is projected to be the same as now[57]; and

✔ even if women's participation rates stay at 1986 levels, future labour force dependency ratios may be less than in the fifties and sixties.[58]

However, the accuracy of underlying assumptions/projections can significantly affect estimates of future CPP benefits that will be made out of the pool of income and consumption taxes from which the benefits will be paid.

Normal Age of Retirement

Of some importance is the age of retirement when CPP benefits begin to be paid. The "normal" retirement age in most national social security systems is between 60 and 65. Many national systems require substantial withdrawal from the labour force in order for participants to be eligible for retirement benefits. However, CPP participants can re-enter the labour force after CPP benefits have commenced and continue to receive such benefits; they do not have to make further CPP contributions in this event.

Since January 1987, when the CPP introduced provisions for early retirement, approximately one-half of new CPP recipients each year have retired before the age of 65. Factors which may have influenced early

retirement are the full benefit indexation introduced in 1974, and the plan maturation in the sense that full benefits became payable in 1976. The mere availability of an adequate retirement income through the combination of the CPP and private pension provisions may also have encouraged older workers to retire early.[59] But early retirement means an actuarial-reduced pension, which in turn can increase non-taxable GIS benefits. The Chief Actuary, OSFI, estimated that lower CPP benefits due to early take-up added over $166 million to GIS costs in 1990 (i.e., or 4.22% of total GIS costs). On the other hand, there is also evidence of an increase in the labour supply before retirement. People desire a longer retirement period, so they save more to finance it.[60]

Life Expectancy

Between 1931 and 1981, life expectancy at birth in Canada increased by 12 years for men and 17 years for women. In 1981 life expectancy at age 60 was nearly 18 years for men and 23 years for women.[61] The increase in life expectancy is an important component of the projected increase in CPP contribution rates. Between 1986 and 2100, life expectancy at birth is projected to increase by 7.3 years for men and 7.2 years for women. Life expectancy at age 65 is projected to increase by 4.4 years for men (a 30% increase) and 5.4 years for women (a 28% increase).[62]

The Canadian life expectancy experience has been continuously reviewed by the Office of the Superintendent of Financial Institutions and the assumptions underlying CPP benefit and cost projections fine-tuned to reflect the improvements that have occurred over the past history of the CPP. Indeed it was always assumed that life expectancy would improve in the future. Similarly, allowance has always been made that fertility levels would decrease from the "baby boom"' years to the subsequent period.

A twofold increase in the seniors' dependency ratio will to a large extent be compensated by a decline in the dependency ratio of other groups. This is assuming that, as expected, participation rates of women grow to equal those of men, the total labour force dependency ratio in 2025 will be the same as at present. However, the redistribution of the dependent population from young to old and population aging is seen as a cause of concern because the per capita cost of supporting seniors (e.g, medical costs, C/QPP and old age transfers, etc.) is higher than for the young. This will mean a rising number of seniors will be supported to some degree by the C/QPP and complementary social transfer programs (OAS/GIS/SPA, provincial programs) and perhaps through the provision of tax breaks for seniors (the age and pension credit). Also, further increases may be required in CPP contribution rates to insure the continuing payment of non-retirement pension benefits especially disability payments.

Moreover, other demographic trends (population aging, immigration cycles, etc..) and perhaps more training requirements for employment might affect other government program costs in the future (health care, education, etc.). This would make CPP and other government programs less affordable; so would the need to pay additional taxes to service or reduce the public debt.

4.5 ROLE OF THE CPP FUND

These evaluation findings respond to the evaluation question "Does the CPP fund fulfil its intended role?" and " Is it important or desirable for the CPP fund to maximize interest income in the same manner as private pension funds?" (First part of Terms of Reference, Question B.1).

Some CPP-related fiscal considerations which might have consequences for the future costs of the CPP are the role of the CPP Fund (Account), the unfunded liability of the CPP, provincial access to the CPP Fund, the modified PAYGO basis of financing CPP benefits, and the effect of the CPP Fund on savings

and capital formation. The evaluation provides a contextual discussion of these program design features which impact on the method of funding CPP. These issues may be reviewed in the next federal-provincial quinquennial review of the CPP by federal and provincial Ministers of Finance, which must occur prior to 1997.

Modified PAYGO Basis of Financing CPP Benefits and the Unfunded Liabilities of the CPP

Concern has been expressed about the large unfunded liability of the CPP which is a consequence of its being a quasi PAYGO plan rather than a full-funding plan. The objective was that CPP benefits be paid from contribution earnings and investment income from the Fund after administrative costs. The CPP is neither a fully-funded plan nor a pure PAYGO plan, although it approximates the latter. In a fully-funded plan there is no unfunded liability.

Fully-funded plans provide a stream of benefit payments over the retirement period which would equal contributions plus accrued interest for the 'average' participant. In a pure PAYGO plan all liabilities are unfunded. The benefits of the generation 'one' (the current generation of seniors) are paid by the contributions of the generation 'two' (the next generation); the benefits of the generation 'two' are paid by generation 'three', etc.. In the case of the CPP, the size of the Fund ("funded" liability) is far less than the Plan's actuarial liability, and it is intended to be so. The CPP Account is a small proportion of the CPP's unfunded liability, sufficient only to pay two and one-half years' benefits in 1994.

The purpose of the Fund (or Account) is to smooth out the effects on contribution rates of expected and unexpected changes in economic and demographic conditions, so that contributions can move smoothly and gradually to the levels required to meet future benefit outlays. As the baby boom enters retirement, more benefits will be paid out and the fund is projected to increase to ensure continuity of benefit payments. To this effect the federal-provincial agreement between Ministers of Finance established a new schedule of higher contribution rates for the 25 year period (1992-2016) to pay for the anticipated increases in benefit levels. This included the incorporation of the Fifteen Year Formula to set subsequent rates so that the account/ expenditure ratio will stabilize at "2" and the CPP Account balance will be sufficient to pay two years benefits after that time.

The CPP, like comparable social insurance plans in other countries, but unlike private plans, is not actuarially funded. The concept of actuarial funding carries with it the concept of an unfunded liability. If the CPP were actuarially funded, the Account at the end of 1991 would be equal, on the basis of the main assumptions of the CPP *Fifteenth Actuarial Report*, to $529.2 billion, i.e., the sum of the actual value of the CPP Account at the end of 1991 ($41.7 billion) and the unfunded liability ($487.5 billion).[63]

The projected "burden" of CPP's unfunded liability on future working generations cannot be isolated from the total taxes which future generations will pay, or from the total government debt which future generations will inherit. Taxes deferred on today's fully funded private pension plans increase budget deficits and the current national debt. But fully funded plans do not pose future costs directly to the government, and when the contributors retire, they will pay taxes on the benefits. The CPP's unfunded liability is paid from future CPP contributions.

It would be highly impractical, if not impossible, for an established PAYGO plan to avoid intergenerational transfers by a substantial shift toward full funding. During the transition period, working generations would be contributing to pay for two sets of benefits--the retired generations who were "promised" a pension under the "old" PAYGO plan, plus the working generations' own pensions

under the "new" fully-funded system. This would likely be perceived as highly inequitable in the current climate of "tax fatigue". The evaluation examines the implications for the economy and affordability of going immediately to PAYGO rates and of different immigration scenarios (section 4.7).

These findings, and those for the individual-affordability analysis (section 4.2) indicate that there are no CPP-related fiscal concerns which argue for changing the way the CPP is funded. The 1993 report of the Canadian Institute of Actuaries *Task Force on Social Security Financing* endorsed the CPP funding method. It concluded that "this method of (pay-as-you-go) funding is a practical method of financing and provides as much real security for future benefits as other financing methods such as full advance actuarial funding". [64] However, the rising levels of disability claims in recent years have significantly exceeded their forecast levels. If this trend continues this suggests that among other things, the CPP rate schedule may have to be revised upward, following the next quinquennial review of contribution rates and funding issues by the federal and provincial Ministers of Finance. This is discussed further in the next section.

Operation of the CPP Fund

At the end of each quarter any credit balance in the CPP Operating Account (into which CPP contributions are deposited) in excess of the operational balance (the estimated amount required in the ensuing three months to pay benefits and administrative expenses) constitutes an increase in the CPP Investment Fund. These moneys are available as loans to the provinces in proportion to the contributions made by the residents of the respective provinces. The securities are non-negotiable obligations payable to the CPP Account (Fund). The interest earned on the securities (loans to the provinces) is payable semi-annually and is based on the average yield to maturity on all outstanding Government of Canada bonds maturing in 20 years or more. This is a somewhat better rate than the provinces would pay on their bonds. Since these loans are subject to recall on short notice they are a more "risky" debt vehicle for provinces than their own bonds.

In 1992, of the total CPP assets of $42 billion, $35.5 billion were in the form of provincial government bonds. The balance was distributed as $3.7 billion in Canada (federal) bonds, and $2.8 billion in government claims.[65] The CPP provincial bond assets were a notable share (33%) of total provincial bonds ($126.9 billion). The CPP and the QPP are important sources of financing for government. But the CPP Fund is not a pool of investments now waiting to be withdrawn. It is merely an account balance showing the total value of contributions (plus interest) already lent to each province.

The federal long-term bond rate must be competitive with other interest rates on risk-free investments, otherwise investors would not purchase the bonds. Charging a rate higher than the federal bond rate means that the federal government, as guardian of the Fund, would be charging provinces a higher rate than is "charged" by its own bond holders, domestic and foreign. This would be seen as unreasonable. If the rate of interest charged on the account were to rise, income taxes or business taxes or sales taxes would have to pay the higher interest cost of borrowed money from the CPP Fund. Also, because the CPP is part of the overall tax-transfer system, higher interest on the CPP Fund would not reduce the total withholdings of taxpayers--it would merely transfer some of the cost from one revenue source to another. The evaluation did not examine the question of investing some or all of the CPP Fund moneys in private sector assets in the same way as the QPP. Such an option would raise the issue of how to ensure the adequate stewardship of these funds. It would also imply that the provincial governments would be required to repay some or all of their loans from the CPP Fund. The federal government and seven

provincial governments with two-thirds of the Canadian population would have to agree on this course of action.

Reports of the CPP Fund "going broke" because it is not lending all the interest back to the provinces (and has required some repayment of principal in 1993 and 1994) and the rising cost of benefits are of concern. The *CPP Fifteenth Actuarial Report* (February 1995) of OSFI predicts that CPP expenditures will continue to rise well into the next century. The report shows that in the absence of increases in the current schedule of contribution rates (1992-2017) negotiated in 1991 by the federal and provincial governments, or a decrease in benefits, the Fund would be depleted by 2015, and in a deficit position over the period 2015-2022. This would be caused primarily by rising CPP disability claims. The federal and provincial governments would then have to cover from their general revenues any annual shortfall in CPP funding requirements which would be as high as $18.7 billion in 2019. The *CPP Fifteenth Actuarial Report* derives an alternative set of higher CPP contribution rates than the current schedule over the period 1997-2019, that would prevent a reduction in the annual 'account-expenditure ratio' (the ratio of funds in the CPP 'year-end Account', or CPP Investment Fund, to the annual costs of all CPP benefits plus administrative expenses) below 1.56, and the depletion of the CPP 'year-end Account'. The same report notes however, that the deficit situation under the current contribution rate schedule would correct itself, as in 2050 the 'account-expenditure ratio', and 'year-end Account' balance, would be the same under the higher rate scenario as under the current contribution rate scenario.

The CPP contribution rate schedule will be examined by the federal-provincial quinquennial review by Ministers of Finance this year. The CPP disability program is also the subject of a separate HRDC evaluation which is now underway.

Saving and Capital Formation

The implications of the potential use of CPP plan savings by governments for capital investment were examined through a literature review [66]. Specifically, Informetrica looked at the question of whether the accumulation of investment funds in the hands of a government agency would lead either to unwarranted government projects or to indirect government control over the private sector through these funds.

This concern has been presented as a reason, among others, for the inappropriateness of the use of actuarial funding principles in the field of social insurance.[67] Other views hold that additional social savings like the CPP account which fund public "physical" capital or "human" capital spending (on education) contribute to growth in national income. There is no evidence that public capital spending necessarily leads to unwarranted government spending.

The extent to which public capital contributes to productivity growth absolutely and relative to private capital formation is uncertain,[68] although public capital does contribute to productivity growth.[69] There is also no apparent consensus on the net effect of public pension programs on aggregate savings and capital formation. Similarly there is no consensus on the difference in the effect on aggregate savings with a public PAYGO plan or a funded plan.

4.6 INTERGENERATIONAL TRANSFERS

These findings respond to the evaluation question "Are intergenerational transfers through the CPP justifiable?" (Terms of Reference, Question, B.3).

Intergenerational transfers are misunderstood. They are the consequence of inter-personal transfers

through public policy programs. Also, public programs which span more than one generation often imply some form of intergenerational transfer.

Two issues are explored:

✔ whether the transfers are justifiable; and

✔ the significance of intergenerational transfers through the CPP.

4.6.1 Justification for Intergenerational Transfers

Public pensions have both a savings function and a transfer function. The savings function assists inter-temporal redistribution of consumption from working years to retirement years. The transfer function comprises income redistribution across generations. In this way public pension plans also perform a social function which private savings do not perform.

Public pension plans are intended to perform a socio-economic function by reducing poverty among seniors, and to guarantee provision for more retirement income than people might make on their own. Reducing uncertainty by having in place social safety net programs (e.g., OAS/GIS/SPA) and a compulsory and contributory CPP pension program for the elderly has psychological benefits, and can have long-term economic benefits. By reducing the risk of personal hardship, it can stimulate business activity, investment, labour productivity and economic growth. But these effects cannot be easily measured.

The quality of life attainable by one generation largely depends on the total spectrum of choices made by previous generations, not on any one program like the CPP. The total legacy (capital stock, technology, natural resources, etc.) left to future generations partly depends on inherited debt and liabilities; it also depends on the real investments made by current generations which benefit future generations. The question whether intergenerational transfers are justifiable and even desirable is largely ethical.[70] There are no simple rules to determine the appropriate size for a public pension fund in a complex economy.

Intergenerational transfers are an essential and unavoidable characteristic of PAYGO-type public pensions.[71] In principle, there is some distribution of taxes and benefits which maintains an appropriate relationship among the living standards of different groups in society. The CPP contribution and benefit provisions are a contingent formula linking the standard of living of pensioners to the standard of living of the population as a whole. The real issue is whether current CPP provisions will help to achieve the "appropriate relativities" with respect to the comparative "standards of living" among generations (the retired vis-à-vis the working population), as well as socio-economic groups. If the consensus as to these appropriate relativities changes over time, then the appropriate level of public pensions (CPP) will change.

4.6.2 Significance of Intergenerational Transfers

Because seniors' benefits are a system of programs and tax allowances, intergenerational transfers cannot be separated from interpersonal transfers. Transfers to early generations of seniors through the CPP resulted from the phase-in provisions and were an unavoidable structural consequence of starting up anything other than a fully-funded plan. Also, it should be remembered that one of the policy objectives when the CPP was introduced in the late sixties, was to move seniors off social assistance. For many of these seniors, therefore, the CPP was another way to give interpersonal transfers.

Many intergenerational transfers occur in other parts of our social system. They are an unavoidable consequence of starting up non-contributory programs like GIS, since early recipients did not have to pay higher income or sales taxes to fund the same program for other generations, yet they received the benefits. Intergenerational and intragenerational transfers occur through tax relief on private pension contributions (RPPs, RRSPs). The income tax system permits investments through RPPs and RRSPs to be deducted from earned income while taxation on such gains (real and inflationary) is deferred until they flow to the recipient. Higher income tax rates are therefore needed to finance the more generous tax allowances granted to RPP and RRSP contributors as compared to CPP contributors, implying interpersonal transfers to those who contribute to private sector vehicles.[72] But, on creation of such plans, older generations are denied the same tax relief on their retirement savings, yet must pay higher tax rates for the government to raise the same tax revenues from a tax base which is smaller than it would be without this tax relief. However, such accumulated RPP and RRSP investments and earnings are subject to taxation when withdrawn at or before the time of retirement.

Much of the private spending on children is treated as consumption spending in the national accounts, when in fact it is an investment in their human capital rather than in physical capital (an intergenerational transfer). The current generation will also leave its accumulated wealth to its children.[73]

4.6.3 Potential Impact on Contribution Rates of Funding CPP with No Intergenerational Transfers

Future increases in contribution rates were expected when CPP was introduced, but not to the levels projected in the *Fifteenth Actuarial Report*. The difference between past and current projections was largely the result of improvements in the CPP benefits, the reduction in the economic growth rate, and demographic changes caused by lower fertility rates and lower mortality rates.

Exhibit IV-8 compares the effect of mortality improvements on the (weighted) average retirement pension PAYGO rate[74] and the retirement pension entry age normal rate (EAN)[75] for the 1974 and 2022 generations. The entry age normal rate (EAN) is what a generation would pay throughout its contributory years if it were to fully fund its own CPP retirement pension benefits. Therefore the EAN rate eliminates the possibility of giving or receiving intergenerational transfers through the CPP.

Exhibit IV-8 reveals that:

✔ improved mortality increases contribution rates for both generations. (Between 1986 and 2100, projected life expectancy at birth will increase by 7.3 years for men and 7.2 years for women - *Fifteenth Actuarial Report*);

✔ lifetime CPP contribution rates for future generations would be substantially more than today's contribution rates even if each generation were to fund its own benefits; entry age normal (EAN) contribution rates with mortality improvements are about 18% (1974 generation) and 27% (2022 generation) higher than rates without mortality improvements; and

✔ even with no intergenerational transfers through the CPP, generations entering the work force at age 18 in 1992 and in 2040 and funding their own retirement would pay 7.5% and 8.0% respectively, of their lifetime and contributory earnings. The lifetime PAYGO rate is 16% higher than the rate that would eliminate intergenerational transfers.

EXHIBIT IV-8:

Estimated Effect of Improved Mortality on Retirement Pension Lifetime Contribution Rates (Percentages)

Year of Birth	(1) Entry-Age Normal		(2) Average PAYGO Rate	(2)Minus (1)
		With Mortality Improvements		
1974	7.5%		8.6%	1.1%
2022	8.0		10.8	2.8
		Without Mortality Improvements		
1974	6.3		7.9	1.6
2022	6.3		9.0	2.7
		Effect of Mortality Improvements		
1974	1.2		0.7	0.5
2022	1.7		1.8	0.1

Source: Chapter V of the Paul Dickinson Study

There are three reasons why there is little difference between the 1974 generation lifetime PAYGO and EAN retirement pension-only rates (1.1 percentage points in total, or about one-half a percentage point for the employee alone). First, the very presence of the baby boom holds the contribution rates below 7.5% until 2017. Second, after 2017 only part of the baby boom is retired, and the other part is still working and contributing. Third, the 1974 cohort does not pay for all its projected increased longevity using PAYGO and, unlike the EAN, it does not pay for its own increased longevity.

If the 1974 generation were to fund its own benefits in a manner which eliminated all possibility of intergenerational transfers through the CPP, it would still contribute 87% of the projected PAYGO retirement pension rate. Even with no decline in fertility rates and no baby boom, future contribution rates would be substantially higher than the 5.4% rate in 1992.[76] Each generation would live longer and it would have to contribute more to receive more benefits. Because of improved mortality both the projected EAN and PAYGO rates are higher. Longer life expectancy pushes contribution rates up because retirement pensions are received for more years. This effect would be felt even if fertility rates had not changed, and there was no such thing as the baby boom generation.

The situation is different for the cohort born in 2022. The lifetime EAN has dropped to 74% of the projected PAYGO rate, mainly because the latter pays the retirement pensions of the trailing edge of the baby boom without having had the advantage of the lower contribution rates created by the baby boom when it was working. The 2022 generation will make transfers to other generations through the CPP, but

its real disposable income will be higher than the 1974 generation.

4.6.4 Size of the Transfers

The extent of intergenerational transfers that will be made from the baby bust (post-boomer) generations to the baby boom generations would be affected by the following considerations:

✔ A substantial proportion of CPP benefits are returned immediately to government in higher tax revenues and lower costs of transfer programs like OAS/GIS (section 2.4 of this chapter).

✔ The baby boom generation is spread over approximately 15 years (1947-1962). The PAYGO-based funding system forces the "trailing edge" of the baby boom generation to fund a larger share of benefits to the "leading edge" of that generation. This is contrary to the apparent popular perception that the next generation (non-boomers) will pay for all the baby boomer generation.

✔ Because of increasing longevity, if the retirement age remains at 65 then even the retirement pension entry-age normal (EAN) CPP contribution rates for today's younger workers are much larger than the 5.4% total contribution rate in 1995. For the generation turning 18 in 1992, the entry-age normal rate is only 13% less than the lifetime average PAYGO rate.

✔ The generations which pay the benefits of baby boomers are at least partly compensated by their own expected longer benefit period (as life expectancy rises) paid for by later generations. Later generations will pay fewer pensioners, but for longer periods.

✔ The increasing use of RPPs and RRSPs will have an effect on the incomes of seniors and will reduce intergenerational transfers. When tax-assisted savings like RRSPs and RPPs and CPP pensions are "withdrawn", both principal and interest are taxable. The rapid growth in the use of tax-assisted savings vehicles (Section 2.1. of Chapter II) should significantly increase taxes paid by retired baby boomers and reduce the cost of income-tested programs like GIS. This in turn will reduce the tax burden on younger generations.

It was considered to be beyond the scope of this evaluation to estimate intergenerational transfers. As well the evaluation did not explore alternatives to bring about any reductions in intergenerational transfers. The complexities of the seniors' tax-program benefit system and their interactive effects would make it extremely difficult to do so. Moreover, focusing on the CPP alone and ignoring inter-program and tax cost and revenue implications would not accurately reflect the true net intergenerational transfers through the CPP component of the overall tax/transfer/pension system. Any quantification of intergenerational transfers would have to focus on at least all transfers within the social security program-tax system as a whole.

Defining an "equitable" intergenerational transfer is ultimately judgmental. Such measurement would be complicated because it is difficult to determine which generation (in a continuum of generations) caused what proportion of real growth. Establishing an equitable intergenerational transfer must involve an equitable distribution of the results of economic growth between generations.

The current fiscal pressures caused by the public debt and the rising cost of other government programs/services will affect the question of intergenerational transfers across the broad government program-tax expenditure system.

Citizens Must Make Choices

If real economic growth continues in the next century, the fundamental question is what the population will choose to "buy" with the country's higher real wealth. If people choose to purchase more non-work time (additional years of retirement as life expectancy increases) instead of other public goods and services (e.g., education, health care, etc.), or consumption goods, then they must pay for these extra years by deferring more income from working years. As well, these other public or private goods may also cost more in the future. This conclusion applies regardless of how the CPP is funded and regardless of demographic trends.

4.7 MACRO-SIMULATION ANALYSIS

Econometric simulations were carried out by Informetrica with its current macro-economic model of the Canadian economy to examine:

✔ the impacts on the main economic indicators (i.e., real gross domestic product, employment, wages, and prices) and on industrial sectors of moving immediately from the current CPP contribution rates to PAYGO rates (including the payroll taxes component), over the period 1992-2020 and on CPP Plan performance and affordability.

✔ implications of higher future immigration levels and slightly higher fertility rates for the economy, dependency ratios, productivity, and CPP performance and affordability.

4.7.1 Impact on Main Economic Variables of Moving to PAYGO Rates

The base (comparison) case assumes real growth rates of 1.2% and 1.4% over the periods 2001-2010, and 2011-2020, respectively, but characteristically similar demographic assumptions to those of the CPP *Fourteenth Actuarial Report*.[77]

However, a real wage rate growth is assumed for the remainder of the current decade which is less than the anticipated growth in real output per employee, because a low amount of labour productivity is available for labour compensation.

This differs from the last actuarial report for the CPP which assumes that real wage growth equals real output per employee. The economic setting for the "base case" was adjusted to reflect the actual results for the year 1993, while the policy setting assumes government debt reduction is the principal priority of government. Therefore, a very low amount of labour productivity improvement is available for real labour wage improvement in this decade.

Efforts to balance the Account by moving to PAYGO rates would require an increase in contribution rates. This would cause at least transitional effects that include higher wages and price levels, and reduced real output and employment.

✔ Moving immediately to higher PAYGO contribution rates would adversely affect aggregate output through the 1990s and for approximately five years in the next decade, with total output at market prices declining by about 0.4% to 0.5% in each of the years, 1995-98, over the base case.

✔ Increased unit labour costs with reduced employment would yield notable negative effects on real disposable income per capita of approximately 0.8% to 1.0% per annum over the period 1995-1998, but

smaller effects thereafter (e.g., 0.6% in 2010).

✔ The financial asset position of the CPP is improved; employee and employer contributions rise by about 0.3% to 0.4% of personal gross income and 0.5% to 0.7%, of the wage bill, respectively, in each of the years 1995-1998.

✔ Near and medium-term increases in contribution rates (from the current schedule to PAYGO) would have minor negative effects on the output and employment of virtually all industrial sectors (negative output effects 0.1% to 0.7% per annum), and primarily over the remainder of the nineties when the spread between PAYGO rates and the current schedule are greatest. Total output at factor cost would decline by about 0.4% per annum over the base case from 1995 to 1998. Production in the public sector would be least affected.

Raising CPP contribution rates to PAYGO immediately would create a larger CPP Account or investment fund in the future. But while the CPP balance would be improved, the net borrowing requirements of the federal and provincial governments would be increased (3.5% in each of 1995 and 1996, and 2.2%, in 1998) due to higher unemployment insurance and welfare payments.

Because provinces fund budget deficits by issuing debt, and debt must be serviced from general revenues, there is no guarantee that an immediate substantial increase in today's CPP rates would reduce the "burden" on tomorrow's generations. Assuming that larger loans from a larger CPP Account did not induce provinces to increase total budget deficits and debt, then the combined effective tax rates (tax plus CPP contribution rates) would be initially higher following a substantial increase in rates, but lower in the future[78].

As long as annual changes in productivity (measured as output per employee) are in the range of 1% or less, prospects for per capita increases in real disposable income of the elderly (and others in the population) are bleak in the 1990s. Past that time, prospects for growth are improved but to rates of increase that would be below the historical norms recorded in the past generation. If productivity growth on a sustained basis were to fall notably below 1% per annum, or current tax levels were to increase, the prospects of diminishing real incomes, and the potential for inter-generational disputes, would be greater.

4.7.2 Impact of Changes in Immigration on the Economy and CPP Affordability

Over the next several decades growth in the seniors' population will be largely determined by the current population and future mortality rates. Changes in the age at which seniors qualify for CPP benefits, or to the rules that determine the growth in individual senior payments could change CPP benefits and costs. Policy-makers could also alter the growth of the labour force (and thereby CPP revenues) through, among other things, immigration policy[79]. Indeed immigration policy may be perceived by some as a solution to the financing of the CPP.

In a second set of estimates, two immigration scenarios were postulated:

✔ a moderate immigration scenario in which emigration (migration to Canada) is stable at 250,000 per annum from 1994 through 2040, while emigration (migration from Canada) rises to 83,000 per annum by 2000, after which it remains stable. This approximates the assumptions of the CPP *Fifteenth Actuarial Report* that net immigration would represent about 0.4% of the population per annum;

✔ a high immigration scenario in which immigration rises linearly from 250,000 in 1995 to a peak of 350,000 in 2040; emigration is at the level of the first scenario[80].

Fertility rates in the two immigration scenarios assume no departure from current Statistics Canada (OSFI) fertility rates which are below natural "replacement levels" (1.8/ 1.85 for Quebec/ rest of Canada in the CPP *Fifteenth Actuarial Report*). Another fertility rate assumption was that fertility rates will rise to a replacement ratio of 2 to 1 by 2000[81]. Fertility rates have been a major factor in the development of the relationship between the CPP long run contribution rates and the benefits. Mortality rates were consistent with Statistics Canada assumptions which underlie those of the last CPP *Actuarial Report*. Participation rates of men and women in the future were also assumed to be generally similar to those of Statistics and OSFI.

The findings of these simulations are as follows:

✔ Neither the dependency ratio nor the CPP balance is likely to be sensitive to changes in immigration levels or fertility; the numbers of elderly dependent members of the population will increase through at least the next 30 years, the size of the other typically dependent populations (e.g., children) will decline. While there are currently about two persons aged 65 or over, per 10 members of the labour force, this will rise to about 4 per 10 persons in the Labour Force by 2030, about the same ratio as currently prevails for children;

✔ There would be increased transitional public finance costs in the shorter term because of small increases in unemployment, education, health and welfare payments caused by the high immigration scenario. But in the long run, an increased population size (due to immigration) may yield a productive economy with no adverse consequences for unemployment or related influences on public expenditures (including CPP).

Informetrica noted that the current practice of increasing CPP payments only to accommodate consumer price index inflation effectively means that none of the productivity gains in the economy are shared with the elderly after they have reached the age of 65 (although these gains may be partially the results of their efforts). For those who reach this age, normal life expectancy now exceeds 20 years. Consequently, a 1% annual productivity growth would leave the per capita income of seniors dependent on the CPP, unchanged from today. This practice extends to much of the rest of the public income transfer system for the elderly. Informetrica found that if annual CPP payments were, for example, indexed to wage rate increases, per capita incomes of the elderly would increase annually by 1%, but those of the balance of the population (dependent mainly on employment income) would decline annually by 0.2%.

4.8 CONCLUSIONS

✔ Projected contribution rates do not by themselves suggest that the CPP will become unaffordable when using future expected growth in real disposable income as an indicator. The CPP will be affordable in the future if at least a 1% per annum real growth rate in the economy is maintained, other things being equal. However, "ability" and "willingness to pay" for the CPP would be affected by other factors: how much of future real growth (productivity gain) would be directed towards growth in personal disposable income; and the need to finance other programs and to service or reduce government debt. Further increases in projected costs of CPP non-pension components --disability and survivor benefits would also affect the affordability of the program as whole.

✔ The redistribution of the dependent population from young to old and population aging is seen as a cause of concern because the per capita cost of supporting seniors (e.g, medical costs, C/QPP and old age transfers) is higher than for the young . This will mean a rising number of seniors who will be supported to some degree by the C/QPP and complementary social transfer programs (OAS/ GIS/SPA, provincial programs) and perhaps by tax breaks to seniors (e.g. age and pension credits). Other demographic trends (immigration cycles) and perhaps more training requirements for employment might affect other government program costs in the future (health care, education, etc.). This would make CPP and other government programs less affordable at a time when there is a need to pay additional taxes to service and reduce the national debt.

✔ The efficiency with which the CPP performs its task is enhanced by its effects on the net costs of other seniors programs and on the tax revenues recovered through the CPP pension. A significant portion (about 40% in 1993) of C/QPP payments ($18.16 billion) is returned to governments either through higher tax revenues or lower complementary programs (OAS/GIS/SPA) costs. When allowance is made for the C/QPP tax credit on contributions, the net costs of C/QPP in the tax-transfer system are about 32% less than its gross costs, exclusive of the tax treatment of employer contributions.

✔ Intergenerational transfers are misunderstood and are not easily measurable. They are an unavoidable consequence of running a plan on a PAYGO basis and particularly, if the phase-in period for entitlement to full benefits is very short, as was the case with CPP. They are a political value judgment and also occur in other transfer and tax assistance programs (e.g., GIS, RPPs, RRSPs, etc.). If the 1974 generation were to fund its own benefits in such a way as to eliminate all possibilities of intergenerational transfers through the CPP, it would contribute over 87% of the projected PAYGO rate for the same generation.

✔ The impact of moving immediately to PAYGO contribution rates would have negative effects in the short term; real disposable income per capita would decline 0.8% to 1.0% per annum over the period 1995-98.

✔ If real economic growth continues in the next century, the fundamental question is what the population will choose to "buy" with the country's higher real wealth. If people choose to purchase more additional years of retirement as life expectancy increases instead of other public goods and services (e.g., education, health care, etc.), or consumption goods, then they must pay for these extra years by deferring more income from working years. This conclusion applies regardless of how the CPP is funded.

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Chapter V - Knowledge Of The CPP

Chapter V of the evaluation summarizes the evaluation findings for the evaluation question "What messages need to be sent to Canadians about the role and viability of CPP?" (second part of Terms of Reference, Question B.1).

5.1 KNOWLEDGE AND POPULAR PERCEPTIONS OF THE CPP

Recent evidence suggests a wide gap between the actual and perceived circumstances of the CPP in the public mind.

A 1985 public opinion survey found only 59% of those surveyed were able to name the C/ QPP without prompting.[82] Upon being prompted, only 41% knew that contributions were related to earnings. Only 32% knew that benefits were indexed, and as few as 9% made a reasonable estimate of the benefits.

Based on this survey, a report of the Canada Pension Plan Advisory Board concluded that at least half the population was unable to make a reasonable estimate of its retirement income needs.[83] Awareness rises with age and income level, but even in the 45-64 age group some 39% were unaware of the proportion of salary replaced by their pension plans.

Although Statistics Canada reported that 92% of RPP members were in defined benefit plans in 1986,[84] the survey showed that only 59% of those with employer-sponsored plans knew they were in this type of plan. The survey report's author noted:

"Certainly we would conclude that the average Canadian is either not consciously planning for his or her retirement security ... (or is) ... building on a foundation of ignorance."

Canadians have serious concerns about the financial viability of the CPP. A recent public opinion survey by Angus Reid[85] found that 50% of Canadians believe that the CPP will be providing a significantly reduced level of benefits by the time they retire. Three in ten (31%) believe the CPP will no longer exist and only 17% believe that it will offer the same benefits as now.

The evaluation concludes that there is a disturbing lack of accurate information not only about the expected consequences of higher CPP contribution rates in the future, but even about the very nature of the Plan. This is evident in the statements of supposedly informed commentators about things like the CPP account "going broke," and the apparent misapprehension that higher CPP contributions rates in the future will reduce disposable income and living standards below today's levels.

Of particular concern are negative media comments about the CPP. Quotations from a recent *MacLean's* article (subsequently abbreviated in *Reader's Digest*) show the type of concerns expressed by the popular press, some of which are given credibility by the professions of the people quoted [86]:

✔ President of Royal Trust's mutual fund division: "The system is bankrupt. Nobody under 30 today will ever collect Old Age Security and CPP benefits unless they are destitute."

✔ "But as the population bulge of Canadians born between 1946 and 1966 ... ages, the flaws in the plan's original design are becoming more difficult to ignore."

✔ Forty-two-year-old professor of actuarial and statistical sciences: "Personally, I believe that something called the Canada Pension Plan might be there when I retire. However, I think that it will likely be heavily taxed or that the benefits will be pared right back." Other pension experts share (his) view that as the shortage of funds worsens, the federal government will whittle away at the CPP until eventually only the truly destitute will collect benefits.

✔ "For many Canadians, especially those who are members of the baby boom generation, the reality is likely to be sobering indeed."

A recent quotation reported in the business section of *The Globe and Mail* (April 21, 1994) states:

"Higher contribution rates required to keep the CPP solvent pose huge generational issues...."Will the next generation pay my pension?...Will my kids want to pay my pension?"

Even if misperceptions about what the CPP is and its future viability are held by only a small proportion of the population at first, they can become widespread and have a snowball effect. It is very important that misperceptions be countered with adequate information as soon as possible. Incorrect or incomplete or misinterpreted information, especially when widely publicized, may make some people unwilling to pay the projected contributions.

If misperceptions get popularized by the media, people who may be fully content with what they are getting from the CPP

become demoralized (and may become unwilling to pay). This will occur even though they may prefer having a public plan which forces them to save for retirement; they may value the risk-free nature of their investment in the plan, and they may recognize the benefits of having at least a portion of their retirement income portfolio protected against the effects of unanticipated inflation (i.e., the purchasing power of the CPP retirement income). In this case their unwillingness to pay is driven by fear. They think that the projected return will not be realized if society reneges on the "pension promise" implicit in their contributions.

Fear that the pension promise will be broken and that CPP contributions will be wasted can cause feelings of injustice and inequity, which in turn may cause some members to try to avoid their own obligations to society (e.g., paying income taxes or the GST). Once the fear created by misperception begins to take root, the snowball effect on fears of repudiation can weaken support for the CPP, even among older contributors.

5.2 IMPROVING INFORMATION

Whether the public supports the Canada Pension Plan and whether it is willing to pay the contribution rates, depends on the perception of what the plan offers the individual contributor.

In light of apparently prevalent misperceptions and misinformation about the CPP, more comprehensive and more accurate information about the CPP in the hands of the public would help alleviate this problem. The Income Security Programs Branch of Human Resources Development Canada, which administers the CPP has undertaken a special CPP communication strategy initiative to improve the provision of information about CPP to beneficiaries and the general public[87].

5.3 CONCLUSIONS

✔ Recent evidence suggests a wide gap between the actual and perceived circumstance of the CPP in the public mind.

✔ There is an underlying uncertainty in society about whether the CPP's pension promise will be honoured when the current baby boomer contributors reach retirement.

✔ There is fear that future generations may be unable and/or unwilling to pay the promised benefits and concerns about future affordability. These fears have been exaggerated by the lack of adequate information and misinterpretation of available information.

✔ Whether the public supports the CPP and whether it is willing to pay the contribution rates, depends on an accurate perception of what the CPP offers the individual contributor, and on how the information is made available to the public.

✔ Income Security Programs Branch, Human Resources Development Canada has responded to this problem by launching a special CPP communication strategy to better inform CPP beneficiaries and the general public on CPP issues.

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Appendix

TERMS OF REFERENCE FOR AN
EVALUATION OF THE CANADA PENSION PLAN

THE CONTEXT OF THE EVALUATION

The CPP was designed to complement other components of the public and private pension system. Its role and objectives, and the issues involved, cannot be isolated from those of the overall system. Annex A gives further explanation.

THE SCOPE OF THE EVALUATION

The system-related issues and socio-economic environment issues surrounding the CPP are too broad and complex for the evaluation to address them all adequately. Consequently it will focus on a sub-set of questions chosen to reflect major concerns raised in the literature, in discussions with Health and Welfare officials, and in the legislative process for Bill C-39.

To give quicker access to the evaluation's analysis and conclusions, and to give flexibility for including other issues which may arise during the analysis, it is proposed that the evaluation be conducted in three Phases. Phase I will deal with Pensions and Funding, Phase II with Ancillary Benefits and with any other issues which emerge during Phase I and Phase III will deal with Communications. Phase III will be conducted separate from but not necessarily subsequent to Phase I and II.

Phase I: Pensions and Funding

Part A: The Pen CPP Retirement Pension

1. What proportion of the gross and net income of retirees comes from CPP?
2. What earnings replacement rates are provided by CPP retirement pensions alone, and by the public pension system as a whole?

Part B: Contributions and Funding

1. Is a compulsory and contributory CPP still warranted in the changes and changing system of public and private pensions?
2. Does the CPP fund fulfil its intended role? Is it important or desirable for the CPP fund to maximize interest income in the same manner as private pension funds?
3. Are inter-generational transfers through CPP justifiable?
4. Do projected future increases in contribution rates and benefit payouts threaten the affordability of CPP in its current form?
5. Do demographic, fiscal and economic concerns about the future argue for changing the manner in which CPP is funded? What messages need be sent to Canadians about the role and viability of CPP?

Phase II: Ancillary Benefits and Other Issues

1. Should CPP provide disability benefits? If so, are current eligibility criteria appropriate? Is the definition of disability applied in a consistent and equitable manner? Do current provisions support rehabilitation and return to the labour force?
2. Should CPP provide survivor benefits? If so, are current provisions appropriate?
3. How do credit-splitting provisions, child-rearing and other drop-out provisions, and interactions among them affect benefits and earnings replacement rates? What are the implications of mandatory credit-splitting for retirement pensions, and for survivor and disability benefits?
4. Other specific issues which may emerge during Phase I.

Phase III: Communications

1. To what degree are people adequately informed about CPP's ancillary benefits?

METHODOLOGY

The evaluation will make use of the following general methodologies:

. review of professional journals; departmental and other analyses, policy documents and reports, and Parliamentary debates;

2. consultations with departmental staff, and staff of other federal departments and agencies;
3. analysis of currently available data and statistics on cost, contributors and beneficiaries, and the economic and demographic assumptions on which they are based;

4. initiation and analysis of additional statistical estimates which are necessary to address the evaluation questions, and which can be readily provided by federal departments and agencies;
5. analysis of linkages among CPP, seniors transfer programs, the tax system facing contributors and pensioners, the private pension system, and other savings vehicles;
6. comparative analysis of current and alternative funding methods.

Further details on evaluation questions and methodology are attached as Annex B.

EVALUATION TEAM

The evaluation will be conducted by Program Audit and Review Directorate (PARD) with input from Income Security Programs (ISP) Branch and the Office of the Superintendent of Financial Institutions (OSFI), in consultation with the Program Policy and Information (PPI) Branch (and the Departments of Finance, Revenue and Statistics Canada if and as necessary). The evaluation team will be assisted by contracted expertise as necessary. The team will report to the Director of Program Evaluation. The evaluation will be guided by a Steering Committee made up of the Director-General of PARD, the Director-General of Income Security Policy and the Director-General of the CPP.

WORKPLAN

Assuming easy access to necessary data and statistics, it is proposed that a Draft Report on Phase I will be completed in ten months or less from approval of Terms of Reference and contracting of necessary expertise. Any amendments to these Terms of Reference needed for Phase II will be submitted to the Steering Committee on (or before) completion of the Draft Report for Phase I.

Assuming no amendments to these Terms of Reference for Phase II, a Draft Report on Phase II will be completed in eight months or less from submission of the Phase I Draft Report.

The Methodology for Phase III will be developed in consultation with the Program Branch. A detailed Methodology and projected costs for Phase III will be presented to the Steering Committee in six weeks or less from approval of this Terms of Reference.

Phase I will require eight person-months from PARD, two from ISP, one from OSFI, $20,000 for administrative costs, $1,000 to $10,000 for possible data runs by Statistics Canada (depending on input available from PPI), and $100,000 to $160,000 for contracted expertise (total $121,000 to $190,000). Assuming no major 'other issues' emerge for Question 4 of Phase II, Phase II will require six person-months from PARD, one person-month from ISP, one person-month from OSFI, $20,000 for administrative cost, $1,000 to $6,000 for possible data runs by Statistics Canada, and $80,000 to $128,000 for contracted expertise (total $101,000 to $154,000).

PROGRESS REPORTS

The evaluation team will submit written progress reports to the Steering Committee on a bi-monthly basis.

APPROVAL

_____ Date
R.J. Allen
Director-General, PARD

_____ Date
Monique Plante
Assistant Deputy Minister, ISP

_____ Date
Francois Pouliot
Senior Assistant Deputy Minister, NHW

ANNEX A: CONTEXT AND PERSPECTIVE

The CPP has its own highly specific objectives, such as earnings replacement equal to 25% of average career earnings to the Years Maximum Pensionable earnings (YMPE). Most of these objectives are automatically fulfilled because they are embedded in the very design of the Plan.

But the CPP originally was designed to complement the OAS program as it then existed; not unduly to encroach upon the role of private pension vehicles as they then existed, and to leave room for future expansion of private pension vehicles. These identify the Plan's intended role in the overall retirement income system, and link that role to how the combination of pension and saving vehicles satisfy the broader objectives of the system as a whole. The role and appropriate design of the CPP, of its component benefits, and of the funding mechanism, are 'objectives' of CPP which depend upon the functioning of the system within which it operates. They may alter or their relative importance may change if other parts of the system change, and if the other parts surpass or fall short of what was anticipated or intended.

Furthermore, the anticipations and intentions for the CPP specifically and the retirement system in general were developed within economic, social and fiscal environments prevailing at the time. These environments too have changed. The global economic environments may have created more uncertainty about what the future holds in store. The role of women and their numbers in the work force have changed the social environment. The Charter of Rights and Freedoms has changed the legal environment. These environmental changes may impact directly on the role and objectives of the CPP, or indirectly via their effect on the performance of other parts of the retirement system. The implications of the indirect impacts for CPP's role and objectives may support the implications of the indirect impacts, or may counter them.

Last but not least, fiscal and economic and demographic factors seem to have created an underlying uncertainty in society about whether CPP's 'pension promise' will be honoured when current contributors reach retirement. For it to be honoured, at least under the current funding arrangements, future generations must be willing and able to pay the promised benefits. Willingness and ability depend not simply on the number of CPP dollars to be collected from and paid out to future generations, but also on the total socio-economic legacy they inherit. If major CPP changes were to be considered, a broad question is whether alternative arrangements would leave future generations with a better or worse legacy. This involves complex issues such as how the alternatives would affect economic growth, other transfer payments, and total government debt.

ANNEX B : DATAILS ON METHODOLOGY

Meetings with Officials

The evaluation will solicit views and information pertinent to the evaluation questions from interviews with officials in:

- NHW: ISP, PPI, Seniors' Secretariat
- OSFI
- The Regie des Rentes
- Other departments (e.g. Finance, National Revenue and Statistics Canada) and other organisations as necessary and advisable

Collecting Data and Information

To supplement the data and information now readily available within NHW, in the literature, and in government studies and publications, the evaluation as necessary will seek the cooperation of:

- ISP for additional program data
- PPI for tabulations using the Survey of Consumer Finances (SCF) and other surveys
- PPI for system structural analysis using the Modular Analysis Package for Systems of Income Transfer (MAPSIT) and the Lifetime Pension Policy Simulation model (LIPPS)
- OSFI for benefits and contribution rates under alternative economic and demographic and program design

assumptions and sensitivities

Only as the analysis unfolds will it be known whether input is required from Statistics Canada and/or a statistical contractor, and from the Department of Finance. Costing estimates take these possibilities into account.

Analytical Methodology by Evaluation Question (Phase I: Pensions and Funding)

A: The CPP Retirement Pension

1. Analysis of Program data, data from SCF and other surveys, data on private pensions and RRSPs, and supplementary data in the literature.
2. Analysis of the literature, survey data, system structure (MAPSIT) and behavioral life-cycle sensitivities (LIPPS)

B: Contributions and Funding

1. Consolidation and integration of A.1 and A.2, and located in broader economic and public/private pension system contexts.
2. Analysis of actual/potential perceptions (or misperceptions) about the nature and purpose of the fund and funding mechanism and their implications; of the sensitivity of costs and contributions to interest rates, and of differences in the nature and role of the public sector and private sector pension systems.
3. Analysis of the sensitivity of projected gross CPP contribution rates to alternative assumptions about economic and demographic variables and private savings/pension plans; the implications for net (post-tax and post-transfer) benefits and contributions, and relative to broader criteria such as GNP and economic growth.
4. Consoliation and integration of B.2, B.3 and B.4, with comparative analysis of the financial, fiscal, economic and intergovernmental implications of alternative funding formulas and methods.

Methodological details for the analysis of evaluation questions in Phase II (Ancillary Benefits and Other Issues) and Phase III (Communications) will be developed during Phase I and submitted to the Steering Committee.

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End Notes

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1. The Terms of Reference of the Evaluation of the Canada Pension Plan are attached as Appendix I.

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2. Treasury Board Policy (1977-47) on "Evaluation of Programs by Departments and Agencies"; this was reconfirmed in the 1992 *Treasury Board Manual, Evaluation and Audit*.

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3. See *1964 White Paper on the Canadian Pension Plan*, p.5, p.7, p.23.

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4. The CPP like comparable social security plans in other countries (and unlike private plans) is not an actuarially funded plan. The methodology used in the actuarial reports of the CPP is quite different from that employed in private plans. Cash flow studies rather than conventional present value studies are used. The actuarial assumptions are:
    i. demographic or related to expected population changes, and include projections for fertility, mortality and immigration rates; and
    ii. economic assumptions that include the rates of increase in both prices and wages, and the rates of interest earned on the CPP account.

This kind of PAYGO-like funding method is used in the vast majority of social security plans in other countries including the USA.

Average pensionable earnings are determined for the period from the attainment of the age of 18 (from January 1, 1966) to the attainment of the age of 65. CPP was gradually phased in. Maximum benefits of 25% of adjusted average earnings were not payable until 1976; CPP retirement benefits were pro-rated before that time. Later beneficiaries would obtain gradually lesser benefits in proportion to their contributions up to the point of 'maturation', or maximum contributory years less permissible drop-outs for periods of low earnings, disability or child rearing. Certain categories of workers are exempted from contributing to the CPP: workers earning less than the Year's Basic Exemption (YBE) of $3,300 in 1993, retired workers or pensioners on the CPP pension who have returned to work, Canadians working abroad for non-Canadian employers, employees of foreign governments and members of religious orders who have taken a vow of poverty. It is estimated that the CPP covers about 92% of the labour force.

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5. Intergovernmental Relations and the Aging of the Population: Challenges Facing Canada, National Advisory Council on Aging, Ministry of Supply and Services, March 1991.

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6. This legislation and almost all the provincial legislation enacted during the 1980s made vesting mandatory after a short period of employment. Also changes were made in the "locking-in" provisions of occupational pension plans. Recent legislation prevents the forfeiting of pension contributions when a worker leaves an employer.

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7. Weitz, Harry: *The Pension Promise: The Past and Future of Canada's Private Pension System*, Thompson Canada Ltd, 1992. Weitz analyzed Statistics Canada data

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8. *Trusted Pension Funds: Financial Statistics*, Statistics Canada, 1991; Frenken, Hubert & Karen Maser: "Employer-Sponsored Pension Plans - Who is Covered?" *Perspectives on Labour and Income*, Statistics Canada, Winter 1992.

   About 92% of plan members participated in 'defined benefits plans' in 1986, which define the pension benefits based on earnings and years of service. Most of the remaining members belonged to 'defined contributions plan'. In the latter plans the accumulated contributions plus investment income are used to purchase a pension at the time of retirement. In 1960 the 1.8 million RPP members comprised 34% of the labour force (i.e., those employed and those unemployed and seeking work). This compared with the 4.8 million members in 1988 who represented 41% of the labour force (*Pension Plans in Canada*, Statistics Canada, 1988.)

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9. *Good Jobs, Bad Jobs*, Economic Council of Canada, 1990; also Weitz, Harry, *The Pension Promise; The Past and Future of Canada 's Private Pension System*, 1992. About 44% of the labour force was covered by private pensions in 1978, but only 41% in 1988. Another source indicates that fewer than one out of four workers were covered by RPPs in 1990 (Frenken, Hubert, "C/QPP Costs and Private Pensions, Statistics Canada", *Perspectives*, Autumn 1993.

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10. Frenken, C/QPP Costs and Private Pensions, 1993

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11. The accumulated assets, however, may not accurately reflect retirement savings as such, since RRSPs can be used as a temporary tax shelter. For example, a large proportion of RRSP outflows in 1990 were cash withdrawals by non-seniors. The extent to which withdrawals by non-seniors reflects early retirement or the use of RRSPs as a temporary tax shelter is not known.

    The proportion of tax-filers contributing to RRSPs increased from 2% in 1968 (some 172,200 individuals) to more than 20% in 1987 (about 3.5 million people). Frenken, Hubert, RRSPs: Tax-Assisted Retirement Savings,

Perspectives in Labour & Income, Statistics Canada, Winter, 1990.

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12. Frenken, Hubert: "RRSPs: Tax-Assisted Retirement Savings", *Perspectives on Labour and Income*, Statistics Canada, Winter 1990.

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13. Ingerman, S., and R. Rowley, *Another Look At Tax Losses And Retirement Savings*, Department of Economics Working Paper, McGill University, January 1994.

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14. Loc. cit. Weitz, *The Pension Promise...*, 1992

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15. The breakdown of CPP pension benefits amounts between men and women is not available (n.a.).

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16. The findings in sections 3.2.1 to 3.2.3 are based on an analysis of Statistics Canada's Survey of Consumer Finance (SCF) data for 1981, 1989 and 1991. It should be noted that the SCF data for 1986 and 1991 were unadjusted and do not compensate for under-reporting. For example, Statistics Canada's past reconciliations of 1986 SCF data on a National Accounts basis has revealed missing income sources, e.g., roughly 10% of CPP income was missing from the 1986 SCF data. So too were significant amounts of income from other sources of importance to seniors, e.g., private pension and investment income. But any differences in the shares from those generated by adjusted data would be sufficiently small that it would not affect the conclusions of this analysis.

    The supporting analytical tables for the analysis of these sub-sets of the seniors population singles and couples and for seniors aged 65 to 74, aged 75 or over, is to be found in Table Set A, Volume Three, Appendix I of the Paul Dickinson technical study or the appendices volume of the Evaluation Report, Old Age Security Program, September 1992 (Health and Welfare Canada).

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17. Single seniors and couples comprised 44% and 56%, respectively, of the population over 64 years of age in 1991.

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18. The unit of analysis is the "census family" rather than the "economic family". The latter obscures the true situation of seniors by including non-senior relatives who share the same dwelling. The "census family" is the more appropriate unit of analysis because social programs and tax allowances for seniors do not take into account the resources of any relative other than the spouse. The census family (CF=1) is an unmarried person, husband or wife, who does not share the same residence with any children who have never married.

    Single seniors in census families of one person (CF=1) accounted for about 92% of all single seniors in 1981 and 1991; senior couples in census families of two persons (CF=2, both over 65) represented about 89% of senior couples in each of these years.

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19. The share of gross (before-tax) income from C/QPP for each target group is the number of benefits received multiplied by the average benefit per recipient.

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20. See *Old Age Security Program Evaluation Report*, 1992. The LICOs differ by family size and by community size, or LICO areas of which there are five (four urban and one rural). These are statistically estimated from a sampling of income and expenditure patterns of the whole population. Until late in 1990 the official LICOs were based on expenditure patterns in 1978 (1978-based LICOs). In late 1990 the official line changed to reflect the spending patterns seen in the 1986 Statistics Canada Census Survey (the 1986-based LICOs). The OAS evaluation employed the disposable income LICO "cut-offs" generated by Statistics Canada for its corresponding gross income LICO "cut-offs". About 32% of single males, 52% of single females, and 12% of couples, 65 years of age or over, were below official gross-income LICOs in 1989. But only 17% of single male seniors, 28% of single female seniors and

5% of senior couples had disposable incomes below the disposable income LICOs. The urban/rural 1989 Statistics Canada Low Income Cut-Offs (LICOs) for 1989 were in the $9,200-$13,500 range for singles, and in the $12,500-$18,300 range for couples.

However, there is a concern about the reliability of Statistics Canada LICO measures of poverty for seniors. Conclusions about program effectiveness as it relates to the poor are sensitive to the choice of measurement criteria, e.g., the use of LICOs. For example, senior have different expenditure patterns from non-seniors and the LICOs do not reflect these differences in standards of living. See the 1992 Evaluation of the Old Age Security program and more recently in the literature (see Ruggeri, G.C., Howard, R., and Bluck, K., "The Incidence of Low Income Among the Elderly", *Canadian Public Policy*, June 1994. The private pension and investment income estimates for 1989 in Exhibit II-5 and II-6 are for sample sizes of less than 100 for males and couples.

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21. A smaller "last payer" @ increment to an individual's or a couple's disposable income, however, does not imply a less effective or desirable program especially if one benefit (e.g., CPP) reduces the cost of another program (e.g., GIS). Also, a program whose benefits adds relatively little to the spending power of recipients may cause such recipients to be less than fervent supporters of that program.

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22. These estimates were obtained with data derived from the Modular Analysis Package for Systems Transfer (MAPSIT) model simulations, and through the estimation of effective marginal tax rates faced by representative seniors. MAPSIT models the combined effect of multiple programs in the tax-transfer system. It incorporates marginal tax rates and eligibility requirements for OAS, GIS and CPP. It provides some indication of how much of the CPP effectively is retained as disposable income and how much immediately returns to the government via income taxes and lower income-tested benefits.

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23. GIS was added to the system before OAS because the OAS is already income-tested at higher gross income levels and will move to lower levels of real income if indexing to three percentage points below the annual inflation rate continues. The analysis also adds OAS/GIS last in the sequence of seniors' benefits, because at inception (in 1966) CPP provided earnings replacement of 43% at Year's Maximum Pensionable Earnings (YMPE), or at the average industrial wage, when combined with OAS/GIS. The combined effect of the programs in the tax-transfer system in terms of earnings replacement, the "system effect", is illustrated in Exhibit III-9. There is also on-going discussion in the press and literature about the viability of maintaining a universal OAS benefit.

    Although the decision to put the tax credits before the transfer programs in the sequence of values-added is arbitrary, this is not particularly significant. Because the allowances are tax credits rather than exemptions or deductions, they have no effect on the marginal tax rates at which the incremental value of CPP is calculated, with two minor exceptions. At the lowest income levels, the tax credits reduce the range in which the 17% federal rate applies, by increasing the range of income on which no taxes are payable. Income testing the age credit as per the February 1994 Budget alters marginal tax rates for seniors with gross incomes between $25,921 and $49,134 by about between 4% to 7%.

    A theoretical "last payer" analysis would suggest that the combined effect of the income-tested GIS and related provincial programs means that some of those with low earnings levels during their working life have their C/QPP retirement benefits completely taxed away. In Ontario, for example a "last payer" analysis would indicate that the combination of the provincial GAINS-A program and the GIS means that someone with little private income gets almost no increase in disposable income from one-half of the maximum CPP benefit despite years of contribution. CPP's contribution to disposable (net) income, reduces the contribution of GIS and GAINS to disposable income and there may be little change in disposable income. (This was discussed in the Dickinson study as well as a recent study by Thomas J. Courchesne, *Social Canada in the Millennium: Reform Imperatives and Restructuring Principles*, 1994.)

    Eliminating programs like GIS and GAINS-A would also substantially increase the "last payer" of CPP benefits for low income seniors although they would as result receive less disposable income. Increasing the "last payer" net value of CPP benefits by reducing other benefits would improve the perceived effectiveness of CPP, but do so by reducing the effectiveness of the system as a whole.

24. The unit of analysis is the "census family". This is discussed in the previous endnote 18.

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25. These estimates are based on a 'first payer' analysis of these effects and this approach is explained previously in section 3.2.

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26. *Chapter C-8, Part II, Section 46 to 51, Statutes of Canada , 1985*. While the replacement rate is stated to be 25% of average pensionable earnings, it is effectively 24% because pensions are based on the average of the last three years' YMPE, including the year in which the retirement pension becomes payable.

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27. A 70% replacement rate for private pensions is a target of many private and public RPPs. Since retirees are not required to pay Unemployment Insurance and CPP withholdings and cease to incur work-related expenses, the real replacement rate is higher than 70% of pre-retirement income. These estimates were obtained with data derived from MAPSIT model simulations and through the estimation of effective marginal tax rates for representative seniors.

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28. The CPP retirement pension equals 25% of the average adjusted pensionable earnings (YMPE) in the year of retirement and the two previous years.

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29. Assuming no CPP income in retirement OAS/GIS replaced 62% and 31% of pre-retirement gross income at 50% and 100% YMPE earnings in 1993; in the same year it replaced 76% and 43% of pre-retirement disposable income at 50% and 100% YMPE earnings (see Paul Dickinson background study, Chapter I, Table I-3, p.43).

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30. The internal rate of return is the rate of interest at which the present value (PV) of contributions equals the present value of benefits.

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31. The present value ratio is the ratio of the discounted present values of benefits to the discounted present value of contributions. The discount rate is the "opportunity cost" of capital, the return realized if CPP contributions had been invested in the next best alternative investment. The problem lies in knowing what the next best alternative interest rate will be when projecting many years in the future.

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32. The IRRs were calculated by Bernard Dussault, Chief Actuary, OSFI. The PV figures up to and including the 1980 cohort are from:

    - Dalgleish, Brenda, "Are Pensions Safe?, Why Canadians Cannot Count on Government to Secure a Golden Retirement", *Maclean's*, March 22, 1992.

    - Brown, Robert L., "The Future of the Canada/Quebec Pension Plans", Mimeo, Institute of Insurance and Pension Research, University of Waterloo, 1993.

    The PV estimate for the 2000 cohort (also taken from Brown, 1993) is from work on the QPP by Jean-Claude Ménard of La Régie des Rentes du Québec, in the *Proceedings of the Canadian Institute of Actuaries* (PCIA), Volume XXIII, No. 1, November 1991. Only Dussault provided estimates of dollar benefit to dollar contribution ratios for the IRRs. It is also possible to calculate rates of return on public investment in the OAS, medical care for the elderly, etc...

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33. This interpretation was conveyed in work by Jean-Claude Ménard, of La Régie des rentes du Québec, as reported at the meeting of the Canadian Institute of Actuaries (*Proceedings, Canadian Institute of Actuaries*, Volume XXIII,

No 1), November 1991. Such interpretations have also appeared in the press (Brenda Dalgleish, "Are Pensions Safe? Why Canadians Cannot Count on Government to Secure a Golden Retirement", *Maclean's*, March 22, 1992.

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34. There is no easy way to transform the PV value ratio into a percentage of the assumed interest rate.

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35. These individual IRRs were also computed net of administrative expenses. As well these calculations do not take into account the employer's contribution to the CPP because the focus is the rate of return to the individual contributor as employee. However, rates of return were derived for the self-employed who pay both the CPP employer and employee contribution shares. Phase II of the CPP evaluation will address the relevance and implications of the employer's contribution. The true rates of return to individual contributors lie somewhere between the "employee rates" and the "self-employed rates".

    Factoring in the employer's contribution explicitly in the calculation of the return on an employee's CPP retirement pension would require critical assumptions, among others, the proportion of the employer's contribution to CPP which is passed on to the employee through lower wages, the implications for the employer's contribution for the employer's sponsored pension plan for employees, the income tax bracket and benefits of the employer. Exhibit III-11 provides the lifetime nominal rates of return for the self-employed individual who pays both the employer's and employee's contributions.

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36. The return for men or women depend on their relative life expectancies. Life expectancy is longer for females than for males.

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37. The drop-out provision relates to the ability of CPP participants to elect to drop-out (15% or about seven years) of the maximum 47 year contributory period (from the age of 18 to 64) in the calculation of benefits. In this case the lowest contributory years are dropped. Also this has the effect of increasing the return even for those who have contributed for the whole contributory period.

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38. The risk-mitigating characteristics of the CPP include guaranteed nationwide coverage, full portability, remote risk of sponsor bankruptcy, full price indexation of benefits, significant economies of scale in administrative expenses, an internal rate of return tied to earnings growth rather than the more volatile investment return, and the assurance that employee contributions will not exceed 50% of the cost of the plan. These benefits of CPP more than counterbalance any risks such as the possibility that employers might go bankrupt without paying CPP contributions collected from employees or the employer's contribution portion.

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39. B. Dussault, and J. Bruce MacDonald, R. Morrison, Office of Superintendent of Financial Institutions, *Actuarial Monograph on the Canada Pension Plan*, 1995.

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40. The assumed 1% real increase in per annum average employment earnings, or the difference between the assumption about annual increases in average employment earnings (4.5%) and prices (3.5%) for these OSFI projections, corresponds to the 25 year (1966-91) average of 0.86% (*CPP Fifteenth Actuarial Report*, p.48)

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41. This also means there is no income available from the CPP Account for the purpose of meeting pension payments; this means no change in the Account balance. Under a pure PAYGO plan any shortfall must be met by higher contributions. In CPP's modified (quasi) PAYGO design, there is the flexibility to avoid frequent fluctuations in the contribution rate.

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42. Over the period 2017-2032 what is called the Fifteen Year Formula will adjust contribution rates so that the 'account/expenditure ratio' will stabilize at 2 within 15 years. That is the CPP account balance will be sufficient to

pay two-years benefits if federal-provincial agreement prevented a formal renewal of the CPP legislation. This objective can be achieved over the very long term under the current contribution rate schedule as set out in the *CPP Fifteenth Actuarial Report*, despite the fact that the 'year-end Account would go into a deficit of almost $19 Billion in 2019 before going back into a surplus position in 2023. This report also derives a schedule of rate increases which would prevent such a sharp decline in the 'account-expenditure ratio' and the 'year-end Account' (Main Table 1B) or Scenario B. The latter Scenario which would contemplate the application of the current 25 - Year Schedule only until 1996 and the application of the Fifteen Year Formula in 1997, would mean that the 'account-expenditure ratio' would decline only to 1.56 in 2004-2006, before rising again. It is worth noting also that the same 'account-expenditure ratio' and 'year-end Account balance' would exist in 2050 under the alternative scenario described in Main Table 1B as if the current schedule of contribution rates --the 25-Year Schedule (Main table 1A, or scenario A) were maintained until 2016.

The comparable contribution rates between scenario A (the current Twenty Five-Year --1992-2017 federal-provincial current schedule) and Scenario B (the Fifteen-year beginning in 1997) would be as follows in selected years (Scenario B in bold): year 2000, 6.6%/**7.16**%; year 2010, 8.9%/**10.28%**; year 2017, 10.73%/**12%**; year 2030: 15.43%/**13..91%**. The Scenario B contribution rates are higher until 2020 when they begin t be surpassed by the Scenario A rates (CPP Fifteenth Actuarial Report).

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43. Simulations by OSFI reveal that the difference caused by even a one-quarter percentage point difference in annual real growth is significant. The sensitivity of contribution rates to real growth in average earnings are of the same order of magnitude whether the cause is change in inflation or in earnings growth. The sensitivity analysis suggests that, with the exception of a large or sustained increase in the fertility rate in the near future, any significant reductions in the CPP contribution rates from the main projections would have to come from economic rather than demographic variables.

    A 0.25% increase in real earnings growth reduces the forecast contribution rate from 13.11% to 12.7% in 2050 (*CPP Fourteenth Actuarial Report*). The same sensitivity of contribution to variations in growth rates would be expected from using what are the same growth and inflation rate, or real rate of economic growth assumptions, of the *CPP Fifteenth Actuarial Report*.

---

44. The analysis adopts all the economic and demographic assumptions of the CPP *Fifteenth Actuarial Report*, which underlie the projected contribution rates. The key assumptions are made for what is called the 'ultimate year', which is the first year in the projection period for which the assumed values become constant. The "ultimate year" for the key assumptions is 2000. After the year 2000, the 1% real rate of economic growth (the real increase in average earnings) results from a constant annual growth of 4.5% and constant 3.5% inflation rate.

    The future contribution rates of the CPP as set out in the *CPP Fifteenth Actuarial Report*, or Scenario A, are taken as given. However, the rising level of disability claims in recent years have significantly exceeded their forecast levels. If this trend continues the CPP rate schedule may have to be revised upward, following the next quinquennial review of contribution rates and funding issues by the federal and provincial Ministers of Finance. This review must occur before 1997.

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45. Under a tax indexing scenario of CPI-3% per annum to 2010 and full inflation indexing (FIP) per annum between 2010 and 2030, real disposable income would rise 14.6% between 1992 and 2030 at YMPE gross earnings. The growth in RDI at CPI-3% tax indexing to 2030 would be 4.5%. The effective tax rates used to estimate these real disposable income effects between 1992 and 2030 under different tax indexing scenarios include the CPP contribution rates in the future, less the CPP tax credit.

    If the contribution rates for scenario B were used (where the Fifteen-year Formula begins in 1997), the estimated percentage increase in real disposable income between 1995 and 2030 would be slightly higher under all of the tax indexing scenarios (e.g., 33.3% instead of 32.4% under the YMPE tax indexing mode).

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46. This is based on past estimates (unpublished) made by the Chief Actuary, OSFI on the basis of the contribution

rates in the previous CPP actuarial report (*CPP Fourteenth Actuarial Report*, December 1991). In this event the Chief Actuary, OSFI estimated that the projected contribution rate needed to finance CPP benefits would increase by about 2.7 percentage points, from 13% with 1% real growth, to 15.7% with no growth.

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47. A 1993 OECD study indicates that the cost of the public pension programs in Canada is lower, measured as a percentage of gross domestic product, than in any of the other G-7 industrial countries and that this trend will continue into the next century (*Pension Liabilities in the seven Major Economies*, Paul van den Noord and Richard Herd, OECD Economics Department Working Paper, 1993, and as reported in *The Economist*, August 13, 1994. p.21).

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48. This assumes that in the absence of CPP, taxes would be the only withholdings and would be indexed at YMPE. The employee's share of CPP contributions would reduce the contributor's gross income by 4.52% at 50% YMPE, by 5.08% of gross income at 100% YMPE and by 3.39% of gross income at 150% YMPE.

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49. SIMTAB is a microsimulation package for analyzing the effects of tax-transfer programs in terms of the program costs and their distributional impacts. It is a static model and only takes into account the effects of CPP on provincial and federal taxes and the costs of other federal programs. It does not take into account the induced changes on provincial tax surcharges and provincial social benefit programs.

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50. CPP employer contributions may be viewed in some instances more as an operating expense which reduce profits, assuming they are absorbed in part or in whole by the employer, and as taxes on such profits. In other instances they may be viewed more as part of the wage package to the employee.

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51. An interpretation of this analysis of the net cost to the federal government of the CPP is that the existence of CPP may lower the potential payouts for GIS/SPA to the lowest income class. The induced reductions in the cost of such other programs are caused by the systemic linkages between programs and the tax system and cannot be attributed to the CPP alone. Also there is evidence to suggest that while it is theoretically possible for the CPP and tax system to take away on a net tax basis more GIS than is replaced by CPP at very low incomes, this does not appear to have happened to any extent. (See B. Dussault, and J Bruce MacDonald, R. Morrison, Office of Superintendent of Financial Institutions, *Actuarial Monograph on the Canada Pension Plan*, 1995.

    Simulations carried out by HRDC for this CPP Phase I Evaluation, estimate that if RPP and RRSP contributions were given the same tax treatment as CPP contributions, personal income tax in 1993 would have risen by $2.1 billion federally and $0.9 billion provincially (excluding Quebec).

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52. Chawla, Raj: "An Aging Society: Another Viewpoint", *Canadian Social Trends*, Spring, 1991.

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53. Dependency is the ratio of those who are not in the official labour force to those who are. Of those who are not in the official labour force (the dependent population) these can be broken down into:
    i. the young (ages 0-14);
    ii. the elderly (age 65 or more); and
    iii. others who are neither young nor old, those in institutions, full-time students, care givers at home, the handicapped and those otherwise unable to work.

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54. The role of expected changes in dependency ratios into the next century, as forecast by Statistics Canada, was reviewed in the Informetrica Limited background study *Canada Pension Plan Evaluation, Macroeconomic and Longer-Term Economic Dimensions*, July 7, 1994, p. 21, and Appendix F of this report.

55. Gauthier, Pierre: "Canada's Seniors", *Canadian Social Trends*, Statistics Canada, Autumn 1991.

56. *Aging Populations: the Social Policy Implications*, Organization for Economic Cooperation and Development, Paris, 1988.

57. Fellegi, Ivan P.: "Can We Afford an Aging Society?", *Perspectives on Labour and Income*, Statistics Canada, 1991.

58. Fellegi, Ibid.

59. Akyeampong, Ernest R.: "Discouraged Workers - Where Have They Gone?", *Perspectives on Labour and Income*, Statistics Canada, Autumn 1992.

60. Wrage, Peter: *The Effects of the Growth of Private and Public Pension Plans on Saving and Investment in Canada*, Economic Council of Canada.

61. McDonald, Lynn P. and Richard A. Wanner, *Retirement in Canada*, Buttersworth Canada Ltd., 1990.

62. *Canada Pension Plan Fifteenth Actuarial Report*, p.35.

63. See Appendix C, pp. 97-100, of the CPP *Fifteenth Actuarial Report* for a full explanation of the CPP unfunded actuarial liability and its estimated value at the end of 1991.

    The unfunded actuarial liability arises from the lack of contributions prior to the inception of the CPP and the collection of contributions since its commencement at a rate below the entry-age normal rate (EAN). The EAN rate is defined in endnote 75. The hypothetical estimate for an actuarial Account (funded plus unfunded liability) is the amount just sufficient to pay all the future benefits and administrative expenses for those eligible persons 18 years and over. The unfunded liability component of the Account is the estimated future (post 1991) contributions at the entry-age normal (EAN) actuarial rate at age 18.

    Reference to the CPP Fund is to the CPP Investment Fund which is the credit balance which has been loaned out to the provinces over past years. It is to be distinguished from the CPP Account where CPP contributions are deposited. The CPP Account always maintains a balance which will be needed in the ensuing three months to pay for benefits and administrative expenses. Funds in the CPP Account in excess of the three month operating balance, are lent to the provinces.

64. Canadian Institute of Actuaries, *Task Force on Social Security Financing*, November, 1993, p.1, Executive Summary.

65. Statistics Canada, *National Balance Sheet Accounts*, 1983-1992, SC 13-214 (Ottawa 1993), Table 34.

66. Informetrica also carried out macro-economic assessment of the impact of rising contribution rates and different immigration scenarios on key economic variables and plan affordability. These are reported in section 4.7 of this chapter.

67. Office of the Superintendent of Financial Institutions, Canada Pension Plan, *Fourteenth Actuarial Report* as of December 31, 1991, p.92.

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68. This was found in a similar review by Paul Dickinson.

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69. Investment Canada, *Proceedings of a Conference on Infrastructure and the Economy: Evidence and Implications*, June 3-4, 1994 (Ottawa, forthcoming). A major source of information for this review was obtained from the proceedings of a recently held conference of specialists on infrastructure and the economy.

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70. Boadway, Robin, and David Wildasin, *Public Sector Economics*, (2nd ed.), Little, Brown & Co., 1984.

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71. Ascah, Louis: *Public Pension Theory for the Real World*, September 1992 (Paper prepared for the Conference on Employment, Distribution and Markets, The Jerome Levy Economics Institute of Bard College).

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72. Higher tax rates would not result in the long run if the tax treatment of RPPs and RRSPs stimulated a net increase in the national savings rate, capital formation and economic growth. However, there is no consensus in the literature about any such stimulative effects. It should also be noted in this context that RRSP contributors will repay some of this intergenerational transfer through higher taxes on retirement. As well, some older generations were able to accumulate their retirement savings at substantially less tax cost than present generations.

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73. Pogue and Sgonce, "Social Security and Investment in Human Capital", *National Tax Journal*, 30, 1977.

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74. The PAYGO rate schedule is the set of contribution rates which in each year would raise revenues sufficient to pay for that year's benefits and administrative costs.

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75. The "Entry Age Normal" (EAN) rate is the lifetime contribution rate paid by a generation (cohort), which together with accrued interest (assumed as 6% per annum), would generate revenues just sufficient to fund that generation's benefits. In effect the "Entry Age Normal" rate is a full-funding rate for one generation.

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76. That the EAN retirement pension-only contribution rate would never reach the 10.7% level expected in 2035 understates its cost. If allowance was made for the granting of full CPP benefits in 1976 after only 10 years of contributions, and the granting of full benefits without full contributions from the age of 18 up to 2017, the EAN retirement pension-only rate would be well over 7.5% but probably still under 10.7%. An actuarial funding approach like EAN would be more affordable in the future but at the cost of being less affordable in the past, present and short-term future.

    The "baby boom" refers to people born over the period, 1947-66, when Canada experienced a high birth rate in the immediate post-World War II period. The subsequent generation is sometimes referred to as the "baby bust" generation which experienced a lower birth rate than the former.

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77. This was done to compare the impacts with the effect of a 1% ultimate growth rate by 2000 of the CPP *Fourteenth Actuarial. Report*.

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78. In the same way, for example a fully funded plan would allow lower federal withholdings from working generations (tax plus CPP contributions) in the future but would not require it. It might mean more scope to raise income tax rates.

79. Two other ways of doing so which are not discussed are tax and other policies that alter the fertility rates of women during their child-bearing years, and changing the incentives that encourage earlier retirement among older workers.

80. The latter scenario is consistent with the federal governing party's promises in the fall of 1993 to gradually increase immigration levels in the future.

81. This assumes that women of child-bearing age will have a maximum of two children. This compares with 1.80/ 1.85, Quebec/ rest of Canada, children per child-bearing woman in the other scenario.

82. Gallup Poll and Allenvest Group: *Canadians' Attitudes to Pensions and Pension Reform*, 1985.

83. Canada Pension Plan Advisory Board: *The Level of Pension Awareness in Canada*, A Report to the Minister of National Health and Welfare, October 1989.

84. *Pension Plans in Canada, 1986* Statistics Canada, 1988.

85. Angus Reid Survey, 1993.

86. *Op. cit.*, Dalgleish, "Are Pensions Safe?" *MacLean's*, March 1992.

87. D.R. Hartley Consultants Limited, *A Communications Strategy for the Canada Pension Plan*, Ottawa, September 30, 1992.

TABLE OF CONTENTS

Footnotes

1 The Terms of Reference of the Evaluation of the Canada Pension Plan are attached as Appendix I.

2 Treasury Board Policy (1977-47) on "Evaluation of Programs by Departments and Agencies"; this was reconfirmed in the 1992 *Treasury Board Manual, Evaluation and Audit*.

3 See *1964 White Paper on the Canadian Pension Plan*, p.5, p.7, p.23.

4 The CPP like comparable social security plans in other countries (and unlike private plans) is not an actuarially funded plan. The methodology used in the actuarial reports of the CPP is quite different from that employed in private plans. Cash flow studies rather than conventional present value studies are used. The actuarial assumptions are:

i. demographic or related to expected population changes, and include projections for fertility, mortality and immigration rates; and

ii. economic assumptions that include the rates of increase in both prices and wages, and the rates of interest earned on the CPP account.

This kind of PAYGO-like funding method is used in the vast majority of social security plans in other countries including the USA.

Average pensionable earnings are determined for the period from the attainment of the age of 18 (from January 1, 1966) to the attainment of the age of 65. CPP was gradually phased in. Maximum benefits of 25% of adjusted average earnings were not payable until 1976; CPP retirement benefits were pro-rated before that time. Later beneficiaries would obtain gradually lesser benefits in proportion to their contributions up to the point of 'maturation', or maximum contributory years less permissible drop-outs for periods of low earnings, disability or child rearing. Certain categories of workers are exempted from contributing to the CPP: workers earning less than the Year's Basic Exemption (YBE) of $3,300 in 1993, retired workers or pensioners on the CPP pension who have returned to work, Canadians working abroad for non-Canadian employers, employees of foreign governments and members of religious orders who have taken a vow of poverty. It is estimated that the CPP covers about 92% of the labour force.

5 Intergovernmental Relations and the Aging of the Population: Challenges Facing Canada, National Advisory Council on Aging, Ministry of Supply and Services, March 1991.

6 This legislation and almost all the provincial legislation enacted during the 1980s made vesting mandatory after a short period of employment. Also changes were made in the "locking-in" provisions of occupational pension plans. Recent legislation prevents the forfeiting of pension contributions when a worker leaves an employer.

7 Weitz, Harry: *The Pension Promise: The Past and Future of Canada's Private Pension System*, Thompson Canada Ltd, 1992. Weitz analyzed Statistics Canada data

8 *Trusted Pension Funds: Financial Statistics*, Statistics Canada, 1991; Frenken, Hubert & Karen Maser: "Employer-Sponsored Pension Plans - Who is Covered?" *Perspectives on Labour and Income*, Statistics Canada, Winter 1992.

About 92% of plan members participated in 'defined benefits plans' in 1986, which define the pension benefits based on earnings and years of service. Most of the remaining members belonged to 'defined contributions plan'. In the latter plans the accumulated contributions plus investment income are used to purchase a pension at the time of retirement. In 1960 the 1.8 million RPP members comprised 34% of the labour force (i.e., those employed and those unemployed and seeking work). This compared with the 4.8 million members in 1988 who represented 41% of the labour force (*Pension Plans in Canada*, Statistics Canada, 1988.)

9 *Good Jobs, Bad Jobs*, Economic Council of Canada, 1990; also Weitz, Harry, *The Pension Promise; The Past and Future of Canada 's Private Pension System*, 1992. About 44% of the labour force was covered by private pensions in 1978, but only 41% in 1988. Another source indicates that fewer than one out of four workers were covered by RPPs in 1990 (Frenken, Hubert, "C/QPP Costs and Private Pensions, Statistics Canada", *Perspectives*, Autumn 1993

10 Frenken, C/QPP Costs and Private Pensions, 1993

11 The accumulated assets, however, may not accurately reflect retirement savings as such, since RRSPs can be used as a temporary tax shelter. For example, a large proportion of RRSP outflows in 1990 were cash withdrawals by non-seniors. The extent to which withdrawals by non-seniors reflects early retirement or the use of RRSPs as a temporary tax shelter is not known.

The proportion of tax-filers contributing to RRSPs increased from 2% in 1968 (some 172,200 individuals) to more than 20% in 1987 (about 3.5 million people). Frenken, Hubert, RRSPs: Tax-Assisted Retirement Savings, Perspectives in Labour & Income, Statistics Canada, Winter, 1990.

12 Frenken, Hubert: "RRSPs: Tax-Assisted Retirement Savings", *Perspectives on Labour and Income*, Statistics Canada, Winter 1990.

13 Ingerman, S., and R. Rowley, *Another Look At Tax Losses And Retirement Savings*, Department of Economics Working Paper, McGill University, January 1994.

14 Loc. cit. Weitz, *The Pension Promise...*, 1992

15 The breakdown of CPP pension benefits amounts between men and women is not available (n.a.).

16 The findings in sections 3.2.1 to 3.2.3 are based on an analysis of Statistics Canada's Survey of Consumer Finance (SCF) data for 1981, 1989 and 1991. It should be noted that the SCF data for 1986 and 1991 were unadjusted and do not compensate for under-reporting. For example, Statistics Canada's past reconciliations of 1986 SCF data on a National Accounts basis has revealed missing income sources, e.g., roughly 10% of CPP income was missing from the 1986 SCF data. So too were significant amounts of income from other sources of importance to seniors, e.g., private pension and investment income. But any differences in the shares from those generated by adjusted data would be sufficiently small that it would not affect the conclusions of this analysis.

The supporting analytical tables for the analysis of these sub-sets of the seniors population singles and couples and for seniors aged 65 to 74, aged 75 or over, is to be found in Table Set A, Volume Three, Appendix I of the Paul Dickinson technical study or the appendices volume of the Evaluation Report, Old Age Security Program, September 1992 (Health and Welfare Canada).

17 Single seniors and couples comprised 44% and 56%, respectively, of the population over 64 years of age in 1991.

18 The unit of analysis is the "census family" rather than the "economic family". The latter obscures the true situation of seniors by including non-senior relatives who share the same dwelling. The "census family" is the more appropriate unit of analysis because social programs and tax allowances for seniors do not take into account the resources of any relative other than the spouse. The census family (CF=1) is an unmarried person, husband or wife, who does not share the same residence with any children who have never married.

Single seniors in census families of one person (CF=1) accounted for about 92% of all single seniors in 1981 and 1991; senior couples in census families of two persons (CF=2, both over 65) represented about 89% of senior couples in each of these years.

19 The share of gross (before-tax) income from C/QPP for each target group is the number of benefits received multiplied by the average benefit per recipient.

20 See *Old Age Security Program Evaluation Report*, 1992. The LICOs differ by family size and by community size, or LICO areas of which there are five (four urban and one rural). These are statistically estimated from a sampling of income and expenditure patterns of the whole population. Until late in 1990 the official LICOs were based on expenditure patterns in 1978 (1978-based LICOs). In late 1990 the official line changed to reflect the spending patterns seen in the 1986 Statistics Canada Census Survey (the 1986-based LICOs). The OAS evaluation employed the disposable income LICO "cut-offs" generated by Statistics Canada for its corresponding gross income LICO "cut-offs". About 32% of single males, 52% of single females, and 12% of couples, 65 years of age or over, were below official gross-income LICOs in 1989. But only 17% of single male seniors, 28% of single female seniors and 5% of senior couples had disposable incomes below the disposable income LICOs. The urban/rural 1989 Statistics Canada Low Income Cut-Offs (LICOs) for 1989 were in the $9,200-$13,500 range for singles, and in the $12,500-$18,300 range for couples.

However, there is a concern about the reliability of Statistics Canada LICO measures of poverty for seniors. Conclusions about program effectiveness as it relates to the poor are sensitive to the choice of measurement criteria, e.g., the use of LICOs. For example, senior have different expenditure patterns from non-seniors and the LICOs do not reflect these differences in standards of living. See the 1992 Evaluation of the Old Age Security program and more recently in the literature (see Ruggeri, G.C., Howard, R., and Bluck, K., "The Incidence of Low Income Among the Elderly", *Canadian Public Policy*, June 1994. The private pension and investment income estimates for 1989 in Exhibit II-5 and II-6 are for sample sizes of less than 100 for males and couples.

21 A smaller "last payer" @ increment to an individual's or a couple's disposable income, however, does not imply a less effective or desirable program especially if one benefit (e.g., CPP) reduces the cost of another program (e.g., GIS). Also, a program whose benefits adds relatively little to the spending power of recipients may cause such recipients to be less than fervent supporters of that program.

22 These estimates were obtained with data derived from the Modular Analysis Package for Systems Transfer (MAPSIT) model simulations, and through the estimation of effective marginal tax rates faced by representative seniors. MAPSIT models the combined effect of multiple programs in the tax-transfer system. It incorporates marginal tax rates and eligibility requirements for OAS, GIS and CPP. It provides some indication of how much of the CPP effectively is retained as disposable income and how much immediately returns to the government via income taxes and lower income-tested benefits.

23 a

24 The unit of analysis is the "census family". This is discussed in the previous endnote 18.

25 These estimates are based on a 'first payer' analysis of these effects and this approach is explained previously in section 3.2.

26 *Chapter C-8, Part II, Section 46 to 51, Statutes of Canada , 1985*. While the replacement rate is stated to be 25% of average pensionable earnings, it is effectively 24% because pensions are based on the average of the last three years' YMPE, including the year in which the retirement pension becomes payable.

27 A 70% replacement rate for private pensions is a target of many private and public RPPs. Since retirees are not required to pay Unemployment Insurance and CPP withholdings and cease to incur work-related expenses, the real replacement rate is higher than 70% of pre-retirement income. These estimates were obtained with data derived from MAPSIT model simulations and through the estimation of effective marginal tax rates for representative seniors.

28 The CPP retirement pension equals 25% of the average adjusted pensionable earnings (YMPE) in the year of retirement and the two previous years.

29 Assuming no CPP income in retirement OAS/GIS replaced 62% and 31% of pre-retirement gross income at 50% and 100% YMPE earnings in 1993; in the same year it replaced 76% and 43% of pre-retirement disposable income at 50% and 100% YMPE earnings (see Paul Dickinson background study, Chapter I, Table I-3, p.43).

30 The internal rate of return is the rate of interest at which the present value (PV) of contributions equals the present value of benefits.

31 The present value ratio is the ratio of the discounted present values of benefits to the discounted present value of contributions. The discount rate is the "opportunity cost" of capital, the return realized if CPP contributions had been invested in the next best alternative investment. The problem lies in knowing what the next best alternative interest rate will be when projecting many years in the future.

32 The IRRs were calculated by Bernard Dussault, Chief Actuary, OSFI. The PV figures up to and including the 1980 cohort are from:

- Dalgleish, Brenda, "Are Pensions Safe?, Why Canadians Cannot Count on Government to Secure a Golden Retirement", *Maclean's*, March 22, 1992.

- Brown, Robert L., "The Future of the Canada/Quebec Pension Plans", Mimeo, Institute of Insurance and Pension Research, University of Waterloo, 1993.

The PV estimate for the 2000 cohort (also taken from Brown, 1993) is from work on the QPP by Jean-Claude Ménard of La Régie des Rentes du Québec, in the *Proceedings of the Canadian Institute of Actuaries* (PCIA), Volume XXIII, No. 1, November 1991. Only Dussault provided estimates of dollar benefit to dollar contribution ratios for the IRRs. It is also possible to calculate rates of return on public investment in the OAS, medical care for the elderly, etc..

33 This interpretation was conveyed in work by Jean-Claude Ménard, of La Régie des rentes du Québec, as reported at the meeting of the Canadian Institute of Actuaries (*Proceedings, Canadian Institute of Actuaries,* Volume XXIII, No 1), November 1991. Such interpretations have also appeared in the press (Brenda Dalgleish, "Are Pensions Safe? Why Canadians Cannot Count on Government to Secure a Golden Retirement", *Maclean's*, March 22, 1992.

34 There is no easy way to transform the PV value ratio into a percentage of the assumed interest rate.

35 These individual IRRs were also computed net of administrative expenses. As well these calculations do not take into account the employer's contribution to the CPP because the focus is the rate of return to the individual contributor as employee. However, rates of return were derived for the self-employed who pay both the CPP employer and employee contribution shares. Phase II of the CPP evaluation will address the relevance and implications of the employer's contribution. The true rates of return to individual contributors lie somewhere between the "employee rates" and the "self-employed rates".

Factoring in the employer's contribution explicitly in the calculation of the return on an employee's CPP retirement pension would require critical assumptions, among others, the proportion of the employer's contribution to CPP which is passed on to the employee through lower wages, the implications for the employer's contribution for the employer's sponsored pension plan for employees, the income tax bracket and benefits of the employer. Exhibit III-11 provides the lifetime nominal rates of return for the self-employed individual who pays both the employer's and employee's contributions. BACK

36 The return for men or women depend on their relative life expectancies. Life expectancy is longer for females than for males.

37 The drop-out provision relates to the ability of CPP participants to elect to drop-out (15% or about seven years) of the maximum 47 year contributory period (from the age of 18 to 64) in the calculation of benefits. In this case the lowest contributory years are dropped. Also this has the effect of increasing the return even for those who have contributed for the whole contributory period.

38 The risk-mitigating characteristics of the CPP include guaranteed nationwide coverage, full portability, remote risk of sponsor bankruptcy, full price indexation of benefits, significant economies of scale in administrative expenses, an internal rate of return tied to earnings growth rather than the more volatile investment return, and the assurance that employee contributions will not exceed 50% of the cost of the plan. These benefits of CPP more than counterbalance any risks such as the possibility that employers might go bankrupt without paying CPP contributions collected from employees or the employer's contribution portion.

39 B. Dussault, and J. Bruce MacDonald, R. Morrison, Office of Superintendent of Financial Institutions, *Actuarial Monograph on the Canada Pension Plan*, 1995.

40 The assumed 1% real increase in per annum average employment earnings, or the difference between the assumption about annual increases in average employment earnings (4.5%) and prices (3.5%) for these OSFI projections, corresponds to the 25 year (1966-91) average of 0.86% (*CPP Fifteenth Actuarial Report*, p.48) BACK

41 This also means there is no income available from the CPP Account for the purpose of meeting pension payments; this means no change in the Account balance. Under a pure PAYGO plan any shortfall must be met by higher contributions. In CPP's modified (quasi) PAYGO design, there is the flexibility to avoid frequent fluctuations in the contribution rate.

42 Over the period 2017-2032 what is called the Fifteen Year Formula will adjust contribution rates so that the 'account/expenditure ratio' will stabilize at 2 within 15 years. That is the CPP account balance will be sufficient to pay two-years benefits if federal-provincial agreement prevented a formal renewal of the CPP legislation. This objective can be achieved over the very long term under the current contribution rate schedule as set out in the *CPP Fifteenth Actuarial Report*, despite the fact that the 'year-end Account would go into a deficit of almost $19 Billion in 2019 before going back into a surplus position in 2023. This report also derives a schedule of rate increases which would prevent such a sharp decline in the 'account-expenditure ratio' and the 'year-end Account' (Main Table 1B) or Scenario B. The latter Scenario which would contemplate the application of the current 25 - Year Schedule only until 1996 and the application of the Fifteen Year Formula in 1997, would mean that the 'account-expenditure ratio' would decline only to 1.56 in 2004-2006, before rising again. It is worth noting also that the same 'account-expenditure ratio' and 'year-end Account balance' would exist in 2050 under the alternative scenario described in Main Table 1B as if the current schedule of contribution rates --the 25-Year Schedule (Main table 1A, or scenario A) were maintained until 2016.

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A 0.25% increase in real earnings growth reduces the forecast contribution rate from 13.11% to 12.7% in 2050 (*CPP Fourteenth Actuarial Report*). The same sensitivity of contribution to variations in growth rates would be expected from using what are the same growth and inflation rate, or real rate of economic growth assumptions, of the *CPP Fifteenth Actuarial Report*. BACK

44 The analysis adopts all the economic and demographic assumptions of the CPP *Fifteenth Actuarial Report*, which underlie the projected contribution rates. The key assumptions are made for what is called the 'ultimate year', which is the first year in the projection period for which the assumed values become constant. The "ultimate year" for the key assumptions is 2000. After the year 2000, the 1% real rate of economic growth (the real increase in average earnings) results from a constant annual growth of 4.5% and constant 3.5% inflation rate.

The future contribution rates of the CPP as set out in the *CPP Fifteenth Actuarial Report*, or Scenario A, are taken as given. However, the rising level of disability claims in recent years have significantly exceeded their forecast levels. If this trend continues the CPP rate schedule may have to be revised upward, following the next quinquennial review of contribution rates and funding issues by the federal and provincial Ministers of Finance. This review must occur before 1997.

45 Under a tax indexing scenario of CPI-3% per annum to 2010 and full inflation indexing (FIP) per annum between 2010 and 2030, real disposable income would rise 14.6% between 1992 and 2030 at YMPE gross earnings. The growth in RDI at CPI-3% tax indexing to 2030 would be 4.5%. The effective tax rates used to estimate these real disposable income effects between 1992 and 2030 under different tax indexing scenarios include the CPP contribution rates in the future, less the CPP tax credit.

If the contribution rates for scenario B were used (where the Fifteen-year Formula begins in 1997), the estimated percentage increase in real disposable income between 1995 and 2030 would be slightly higher under all of the tax indexing scenarios (e.g., 33.3% instead of 32.4% under the YMPE tax indexing mode).

46 This is based on past estimates (unpublished) made by the Chief Actuary, OSFI on the basis of the contribution rates in the previous CPP actuarial report (*CPP Fourteenth Actuarial Report*, December 1991). In this event the Chief Actuary, OSFI estimated that the projected contribution rate needed to finance CPP benefits would increase by about 2.7 percentage points, from 13% with 1% real growth, to 15.7% with no growth.

47 A 1993 OECD study indicates that the cost of the public pension programs in Canada is lower, measured as a percentage of gross domestic product, than in any of the other G-7 industrial countries and that this trend will continue into the next century (*Pension Liabilities in the seven Major Economies*, Paul van den Noord and Richard Herd, OECD Economics Department Working Paper, 1993, and as reported in *The Economist*, August 13, 1994. p.21).

48 This assumes that in the absence of CPP, taxes would be the only withholdings and would be indexed at YMPE. The employee's share of CPP contributions would reduce the contributor's gross income by 4.52% at 50% YMPE, by 5.08% of gross income at 100% YMPE and by 3.39% of gross income at 150% YMPE.

49 SIMTAB is a microsimulation package for analyzing the effects of tax-transfer programs in terms of the program costs and their distributional impacts. It is a static model and only takes into account the effects of CPP on provincial and federal taxes and the costs of other federal programs. It does not take into account the induced changes on provincial tax surcharges and provincial social benefit programs.

50 CPP employer contributions may be viewed in some instances more as an operating expense which reduce profits, assuming they are absorbed in part or in whole by the employer, and as taxes on such profits. In other instances they may be viewed more as part of the wage package to the employee.

51 An interpretation of this analysis of the net cost to the federal government of the CPP is that the existence of CPP may lower the potential payouts for GIS/SPA to the lowest income class. The induced reductions in the cost of such other programs are caused by the systemic linkages between programs and the tax system and cannot be attributed to the CPP alone. Also there is evidence to suggest that while it is theoretically possible for the CPP and tax system to take away on a net tax basis more GIS than is replaced by CPP at very low incomes, this does not appear to have happened to any extent. (See B. Dussault, and J Bruce MacDonald, R. Morrison, Office of Superintendent of Financial Institutions, *Actuarial Monograph on the Canada Pension Plan*, 1995.

Simulations carried out by HRDC for this CPP Phase I Evaluation, estimate that if RPP and RRSP contributions were given the same tax treatment as CPP contributions, personal income tax in 1993 would have risen by $2.1 billion federally and $0.9 billion provincially (excluding Quebec).

52 Dependency is the ratio of those who are not in the official labour force to those who are. Of those who are not in the official labour force (the dependent population) these can be broken down into:

i. the young (ages 0-14);
ii. the elderly (age 65 or more); and
iii. others who are neither young nor old, those in institutions, full-time students, care givers at home, the handicapped and those otherwise unable to work.

53 The role of expected changes in dependency ratios into the next century, as forecast by Statistics Canada, was reviewed in the Informetrica Limited background study *Canada Pension Plan Evaluation, Macroeconomic and Longer-Term Economic Dimensions*, July 7, 1994, p. 21, and Appendix F of this report.

54 The role of expected changes in dependency ratios into the next century, as forecast by Statistics Canada, was reviewed in the Informetrica Limited background study *Canada Pension Plan Evaluation, Macroeconomic and Longer-Term Economic Dimensions*, July 7, 1994, p. 21, and Appendix F of this report.

55 Gauthier, Pierre: "Canada's Seniors", *Canadian Social Trends*, Statistics Canada, Autumn 1991.

56 Aging Populations: the Social Policy Implications, Organization for Economic Cooperation and Development, Paris, 1988.

57 Fellegi, Ivan P.: "Can We Afford an Aging Society?", *Perspectives on Labour and Income*, Statistics Canada, 1991.

58 Fellegi, Ibid.

59 Akyeampong, Ernest R.: "Discouraged Workers - Where Have They Gone?", *Perspectives on Labour and Income*, Statistics Canada, Autumn 1992.

60 Wrage, Peter: *The Effects of the Growth of Private and Public Pension Plans on Saving and Investment in Canada*, Economic Council of Canada.

61 McDonald, Lynn P. and Richard A. Wanner, *Retirement in Canada*, Buttersworth Canada Ltd., 1990.

62 *Canada Pension Plan Fifteenth Actuarial Report*, p.35.

63 See Appendix C, pp. 97-100, of the CPP *Fifteenth Actuarial Report* for a full explanation of the CPP unfunded actuarial liability and its estimated value at the end of 1991.

The unfunded actuarial liability arises from the lack of contributions prior to the inception of the CPP and the collection of contributions since its commencement at a rate below the entry-age normal rate (EAN). The EAN rate is defined in endnote 75. The hypothetical estimate for an actuarial Account (funded plus unfunded liability) is the amount just sufficient to pay all the future benefits and administrative expenses for those eligible persons 18 years and over. The unfunded liability component of the Account is the estimated future (post 1991) contributions at the entry-age normal (EAN) actuarial rate at age 18.

Reference to the CPP Fund is to the CPP Investment Fund which is the credit balance which has been loaned out to the provinces over past years. It is to be distinguished from the CPP Account where CPP contributions are deposited. The CPP Account always maintains a balance which will be needed in the ensuing three months to pay for benefits and administrative expenses. Funds in the CPP Account in excess of the three month operating balance, are lent to the provinces.

64 Canadian Institute of Actuaries, *Task Force on Social Security Financing*, November, 1993, p.1, Executive Summary.

65 Statistics Canada, *National Balance Sheet Accounts*, 1983-1992, SC 13-214 (Ottawa 1993), Table 34.

66 Informetrica also carried out macro-economic assessment of the impact of rising contribution rates and different immigration scenarios on key economic variables and plan affordability. These are reported in section 4.7 of this chapter.

67 Office of the Superintendent of Financial Institutions, Canada Pension Plan, *Fourteenth Actuarial Report* as of December 31, 1991, p.92.

68 This was found in a similar review by Paul Dickinson.

69 Investment Canada, *Proceedings of a Conference on Infrastructure and the Economy: Evidence and Implications*, June 3-4, 1994 (Ottawa, forthcoming). A major source of information for this review was obtained from the proceedings of a recently held conference of specialists on infrastructure and the economy.

70 Boadway, Robin, and David Wildasin, *Public Sector Economics*, (2nd ed.), Little, Brown & Co., 1984.

71 Ascah, Louis: *Public Pension Theory for the Real World*, September 1992 (Paper prepared for the Conference on Employment, Distribution and Markets, The Jerome Levy Economics Institute of Bard College).

72 Higher tax rates would not result in the long run if the tax treatment of RPPs and RRSPs stimulated a net increase in the national savings rate, capital formation and economic growth. However, there is no consensus in the literature about any such stimulative effects. It should also be noted in this context that RRSP contributors will repay some of this intergenerational transfer through higher taxes on retirement. As well, some older generations were able to accumulate their retirement savings at substantially less tax cost than present generations.

73 Pogue and Sgonce, "Social Security and Investment in Human Capital", *National Tax Journal*, 30, 1977.

74 The PAYGO rate schedule is the set of contribution rates which in each year would raise revenues sufficient to pay for that year's benefits and administrative costs.

75 The "Entry Age Normal" (EAN) rate is the lifetime contribution rate paid by a generation (cohort), which together with accrued interest (assumed as 6% per annum), would generate revenues just sufficient to fund that generation's benefits. In effect the "Entry Age Normal" rate is a full-funding rate for one generation. BACK

76 That the EAN retirement pension-only contribution rate would never reach the 10.7% level expected in 2035 understates its cost. If allowance was made for the granting of full CPP benefits in 1976 after only 10 years of contributions, and the granting of full benefits without full contributions from the age of 18 up to 2017, the EAN retirement pension-only rate would be well over 7.5% but probably still under 10.7%. An actuarial funding approach like EAN would be more affordable in the future but at the cost of being less affordable in the past, present and short-term future.

The "baby boom" refers to people born over the period, 1947-66, when Canada experienced a high birth rate in the immediate post-World War II period. The subsequent generation is sometimes referred to as the "baby bust" generation which experienced a lower birth rate than the former.

77 This was done to compare the impacts with the effect of a 1% ultimate growth rate by 2000 of the CPP *Fourteenth Actuarial. Report*.

78 In the same way, for example a fully funded plan would allow lower federal withholdings from working generations (tax plus CPP contributions) in the future but would not require it. It might mean more scope to raise income tax rates.

79 Two other ways of doing so which are not discussed are tax and other policies that alter the fertility rates of women during their child-bearing years, and changing the incentives that encourage earlier retirement among older workers.

80 The latter scenario is consistent with the federal governing party's promises in the fall of 1993 to gradually increase immigration levels in the future.

81 This assumes that women of child-bearing age will have a maximum of two children. This compares with 1.80/ 1.85, Quebec/ rest of Canada, children per child-bearing woman in the other scenario.

82 Gallup Poll and Allenvest Group: *Canadians' Attitudes to Pensions and Pension Reform*, 1985.

83 Canada Pension Plan Advisory Board: *The Level of Pension Awareness in Canada*, A Report to the Minister of National Health and Welfare, October 1989.

84 *Pension Plans in Canada, 1986* Statistics Canada, 1988.

85 Angus Reid Survey, 1993.

86 *Op. cit.*, Dalgleish, "Are Pensions Safe?" *MacLean's*, March 1992.

87 D.R. Hartley Consultants Limited, *A Communications Strategy for the Canada Pension Plan*, Ottawa, September 30, 1992.