PWL CAPITAL

Optimal Compensation, Saving, and Consumption for Owners of Canadian Controlled Private Corporations

Braden Warwick PhD
Wealth Management
Research Associate
Research & Client Education

Benjamin Felix MBA, CFA, CFP, CIM®
Portfolio Manager, Head,
Research & Client Education

Published: Spring 2023

This report was written by the Research team at PWL Capital Inc. The ideas, opinions, and recommendations contained in this document are those of the authors and do not necessarily represent the views of PWL Capital Inc.

© PWL Capital Inc.

All rights reserved. No part of this publication may be reproduced without prior written approval of the author and/or PWL Capital. PWL Capital would appreciate receiving a copy of any publication or material that uses this document as a source. Please cite this document as:

PWL Capital Inc.,"Optimal Compensation, Saving, and Consumption for Owners of Canadian Controlled Private Corporations"

For more information about this or other publications from PWL Capital, contact:

PWL Capital – Montreal, 3400 de Maisonneuve Ouest, Suite 1501, Montreal, Quebec H3Z 3B8

Tel 514-875-7566 • 1-800-875-7566

info@pwlcapital.com

This document is published by PWL Capital Inc. for your information only. Information on which this document is based is available on request. Particular investments or trading strategies should be evaluated relative to each individual's objectives, in consultation with the Investment Advisor. Opinions of PWL Capital constitute its judgment as of the date of this publication, are subject to change without notice and are provided in good faith but without responsibility for any errors or omissions contained herein. This document is supplied on the basis and understanding that neither PWL Capital Inc. nor its employees, agents or information suppliers is to be under any responsibility of liability whatsoever in respect thereof.

Optimal Compensation, Saving, and Consumption for Owners of Canadian Controlled Private Corporations

Braden Warwick, PhD
Ben Felix, MBA, CFA, CFP, CIM

Abstract

The optimal compensation structure for individuals with a corporation residing in Ontario was investigated in terms of sustainable spending and final after-tax net worth. Four independent variables: salary, retirement age, monthly spending, and asset allocation were varied along with RRSP/IPP strategies. Sustainable spending was solved for by maximizing spending while constraining the Monte Carlo success rate to be ≥90%. The results indicate that combining a systematically varying compensation structure that prioritizes passing through dividends such that notional account values are minimized prior to taking a salary and utilizing an IPP is optimal for individuals with a strong preference for maximizing multi-generational wealth. Alternatively, for individuals with a preference towards maximizing personal consumption, an IPP with maximum salary was preferable. Compensation with only dividends failed to outperform the IPP cases but was able to outperform the max RRSP strategy in terms of sustainable spending. In all cases, distributing capital dividends as they became available generated increased amounts of net worth due to lost purchasing power in real terms when the capital dividend account accumulates inside the corporation. These results suggest that despite often being framed as a one vs the other approach, a corporate compensation structure that consists of both salary and dividends is preferrable for most individuals.

Table of Contents

i. Nomenclature

ACB	Adjusted Cost Base
AF	Annuity Factor
AF_E	Enhanced Annuity Factor
CAPE	Cyclically Adjusted Profit-Earnings Ratio
CCPC	Canadian-Controlled Private Corporation
CCPCT	Canadian-Controlled Private Corporation Transfer for IPP past service funding
CDA	Capital Dividend Account
CRA	Canada Revenue Agency
DB	Defined Benefit
DBL_{65}	Defined Benefit Limit projected forward to age 65
DMS	Dimson, Marsh, and Staunton
Ei(r)	Expected inflation
En(r)	Expected nominal return
Er(r)	Expected real return
EI_{T4}	Employment Income
eRDTOH	Eligible Refundable Dividend Tax On Hand
f	Objective function
FMV	Fair Market Value
GRIP	General Rate Income Pool
^{i}IPP	Growth rate of the IPP
IPP	Individual Pension Plan
IPP_{BI}	Individual Pension Plan Benefit generated by the year of purchase
IPP_{BT}	Total Individual Pension Plan Benefit
IPP_{CI}	Cost to purchase an annuity to provide the Individual Pension Plan Benefit generated by the year of purchase
ITA	Income Tax Act
m	Number of years of past service
MBER	Market-Based Expected Return
MP	Money Purchase Limit
n	Number of years until age 65
nRDTOH	Non-Eligible Refundable Dividend Tax On Hand
PPSPA	Provisional Past Service Pension Adjustment
PSPA	Past Service Pension Adjustment
$PSPA_a$	Past Service Pension Adjustment – alternative calculation method

i. Nomenclature

PSPA_i	Past Service Pension Adjustment – yearly PSPA used in the calculation of PSPAp
PSPA_p	Past Service Pension Adjustment – primary calculation method
PVA_i	Present Value of the Annuity required to fund the IPP benefit generated by the year of purchase
PVA_t	Present Value of the Annuity required to fund the total IPP benefit
QT	Qualifying Transfer
RDTOH	Refundable Dividend Tax On Hand
RRSP	Registered Retirement Savings Plan
$rrsp_{MT}$	Maximum RRSP transfer possible when commuting the value of IPP
$rrsp_r$	Available RRSP contribution room
$rrsp_v$	Current value of registered retirement savings plan
S_{65}	Salary projected forward to age 65
SBR	Small Business Deduction Rate
SBRT	Small Business Deduction Rate Threshold
SS	Sustainable Spending
TF	Terminal Funding
w_1	Weighting factor for final net worth
w_2	Weighting factor for sustainable spending
YP	Number of years of past service purchased

1. Introduction

Owners of Canadian Controlled Private Corporations (CCPCs) are in a unique position to choose how they pay themselves. Primarily, the decision is between paying a salary and paying dividends. Due to tax integration, a feature of the Canadian tax system aimed at achieving a similar effective tax rate at the individual level whether it is taxed inside of a corporation and paid as a dividend or paid directly as a salary, the total combined tax rate paid by the CCPC and the shareholder should be approximately equal, but there are nuances such as salary requiring CPP contributions and generating RRSP room. The salary vs dividend debate for individuals with a CCPC is not new. A common planning strategy suggests consuming dividends and leaving retained earnings inside the corporation to take advantage of lower personal tax rates in future lower income years. While this notion is sensible, it ignores the tax advantages of holding investments in registered accounts, namely the TFSA and RRSP, and the ability to deduct salary from active business income for corporate tax purposes. Since additional RRSP contribution room is generated based on the previous year's salary, pre-paying personal tax is a prerequisite for earning room for tax preferential returns in an RRSP. It is not immediately obvious whether the added RRSP room is worth the cost of pre-paying personal tax.

Felix (2015) attempted to gain insight into investing inside a corporation vs. personal registered accounts in 'A Taxing Decision' [1]. Here, Felix was able to illustrate the long-term advantages of investing in registered accounts as opposed to leaving all investments inside the corporation on the presupposition that registered account room existed for the investor. While this insight was novel at the time, a more sophisticated model is desired to capture the intricacies of the salary vs. dividends debate. Specifically, if RRSP room does not exist the shareholder must take salary to generate future RRSP contribution room.

The goal of this work is to further develop an understanding of the trade-off relationship between taking a salary from a corporation to increase RRSP contribution room for investment of excess earnings and funding consumption with dividends while investing retained earnings inside the corporation. We will attempt to determine which strategy provides the better outcomes from a final after-tax net worth and total consumption perspective for a wide range of scenarios. Additionally, the Individual Pension Plan (IPP) will be evaluated as an alternative option to the RRSP. The IPP is an employer-sponsored pension plan available to owners of a corporation, and it takes full advantage of the defined benefit pension limit as set by the Income Tax Act (ITA). Finally, the concept of taking a consistent salary from year to year will be evaluated against taking a systematically varying (dynamic) salary. Dynamic salary prioritizes consuming dividends when there are Capital Dividend Account (CDA) and Refundable Dividend Tax on Hand (RDTOH) balances available, and consuming salary otherwise.

2. Background

2.1 Canadian-Controlled Private Corporation (CCPC) Taxation

Prior to understanding the relationship between taking salary and taking dividends from the CCPC, it is important to understand how cash flows into and out of the corporation and into the hands of the individual. The first path of cash flow into the corporation is through revenue generation, otherwise known as active business income.

2.1.1 Active Business Income

When a CCPC earns active business income, a certain percentage of net earnings will be taxed. The rate of taxation will depend on both the active and passive (investment) income of the CCPC. In Canada, the small business deduction federally and in most provinces[1] applies to the first $500,000 of active business income provided that passive income is less than $50,000. When passive income increases beyond $150,000, the small business rate no longer applies (except for the provincial portion of corporate tax in Ontario and New Brunswick). The small business rate threshold, SBRT, can be calculated using Equation 1[2]

$$SBRT = \max\left(0{,}500{,}000 - \left(5 * \max\left(0, I_p - 50{,}000\right)\right)\right) \tag{1}$$

where I_p is the passive income earned by the corporation. When I_p is <$50,000 the SBRT is equal to $500,000. Only when I_p increases above $50,000 does the SBRT begin to decrease at a rate of $1 per every $5 of active income above $50,000. When I_p is equal to $150,000 the SBRT is equal to $0, meaning that all income is taxed at the full general corporate rate (for all provinces except ON and NB).

Figure 1 illustrates this concept. Table 1 defines the corporate tax rates for each province. Note that the transition rate is defined as the region of Fig. 1 when passive income is between $50,000-$150,000 and the small business rate applies for the first $500,000 of active income in ON and NB but not for any other provinces.

It seems tempting to maintain passive income below $50,000 to preserve the full $500,000 small business limit. However, a potential planning opportunity exists for residents of Ontario and New Brunswick due to those provinces not implementing the small business rate deduction at passive income levels above $50,000. All income taxed at the federal general business rate increases General Rate Income Pool (GRIP) balance (more on GRIP in Sec. 2.1.2). The GRIP balance allows for the corporation to pay eligible dividends instead of non-eligible dividends, which are taxed more favourably in the hands of the individual based on higher corporate taxes having been paid. Table 2 provides a breakdown of the cash flow of $100,000 at each of the three marginal corporate rates for a resident of Ontario in the highest personal marginal tax bracket.

[1] Saskatchewan being the exception, where the small business deduction limit is $600,000.

[2] Note that a similar reduction to the SBD occurs when taxable capital exceeds $10M and is fully eliminated when taxable capital reaches $50M that was not included in Eq. 1 as it was not applicable to this research.

As evident in Tab. 2, due to the mismatch between federal and provincial treatment of the passive income limit, the added benefit of GRIP outweighs the drawback of paying additional federal corporate tax for residents of Ontario with passive income greater than $50,000 who are consuming dividends. For the remainder of the provinces that do not have this planning opportunity available, it is still worthwhile to observe that despite an extra ~12% corporate taxes owed upfront at the general corporate tax rate, there is only a ~1% increase in effective tax rate once the cash has been passed through to the personal account. Importantly, pre-paying corporate tax at a higher rate and not drawing on GRIP introduces an implied cost which must also be considered. Later analysis will demonstrate how this interacts with the salary vs. dividend compensation decision.

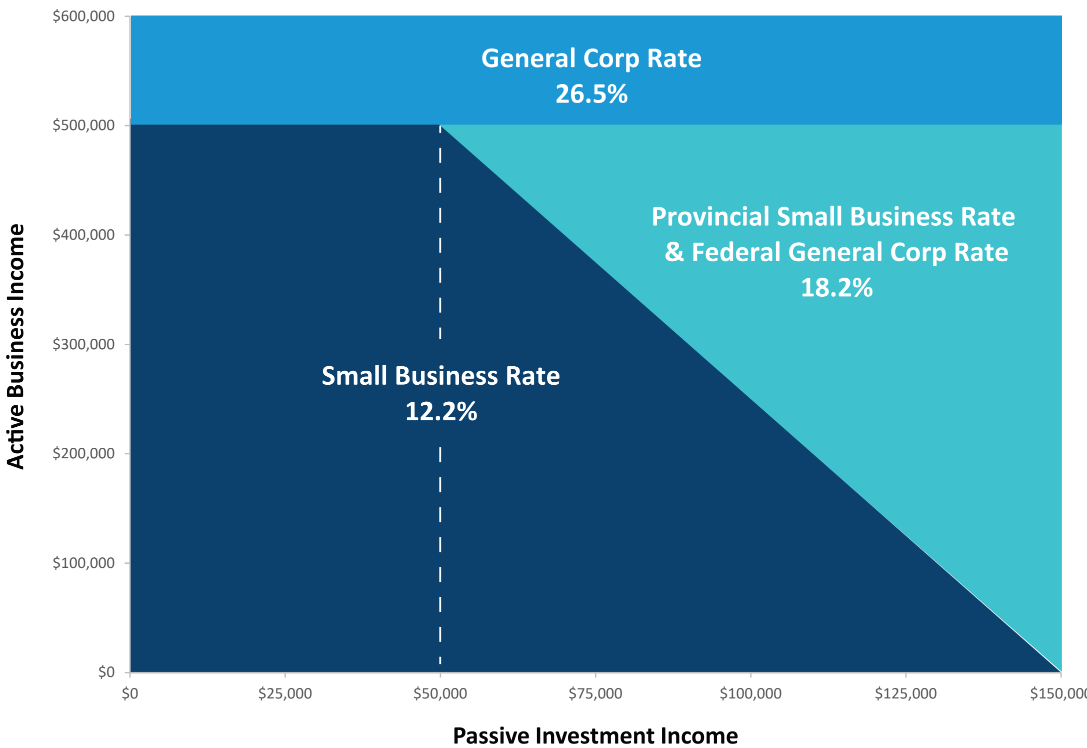

Figure 1: Corporate Marginal Tax Rates as a function of passive investment income for Ontario. The transition point between the Federal General Corporate Rate and the Small Business Rate is known as the Small Business Rate Threshold (SBRT).

Table 1: Corporate Tax Rates for each province. Ontario and New Brunswick highlighted to show discrepancy between their Transition Rate and General Corporate Rate.

	Small Business Rate			Transition Rate			General Corp Rate		
Province	Federal	Provincial	Total	Federal	Provincial	Total	Federal	Provincial	Total
NL	9%	3.0%	12.0%	15.0%	15.0%	30.0%	15.0%	15.0%	30.0%
NS	9%	2.5%	11.5%	15.0%	14.0%	29.0%	15.0%	14.0%	29.0%
NB	9%	2.5%	11.5%	15.0%	2.5%	17.5%	15.0%	14.0%	29.0%
PEI	9%	2.0%	11.0%	15.0%	16.0%	31.0%	15.0%	16.0%	31.0%
ON	9%	3.2%	12.2%	15.0%	3.2%	18.2%	15.0%	11.5%	26.5%
MN	9%	0.0%	9.0%	15.0%	12.0%	27.0%	15.0%	12.0%	27.0%
SK	9%	0.0%	9.0%	15.0%	12.0%	27.0%	15.0%	12.0%	27.0%
BC	9%	2.0%	11.0%	15.0%	12.0%	27.0%	15.0%	12.0%	27.0%
NV	9%	3.0%	12.0%	15.0%	12.0%	27.0%	15.0%	12.0%	27.0%
NWT	9%	2.0%	11.0%	15.0%	11.5%	26.5%	15.0%	11.5%	26.5%
YK	9%	0.0%	9.0%	15.0%	12.0%	27.0%	15.0%	12.0%	27.0%
QB	-	-	18.0%	-	-	26.7%	-	-	26.7%
AB	-	-	11.5%	-	-	27.0%	-	-	27.0%

Table 2: Flow of $100,000 of active corporate income taxed at the three different marginal corporate rates for an Ontario resident in the highest personal marginal tax bracket. Assumes eligible dividend tax rate of 39.34% and a non-eligible dividend tax rate of 47.74%.

	SBR	Transition Zone	General Corp Rate
Active Business Income	$100,000.00	$100,000.00	$100,000.00
Corporate Tax	$12,200.00	$18,200.00	$26,500.00
Net Corporate Cash	$87,800.00	$81,800.00	$73,500.00
Personal Tax	$41,915.72	$32,180.12	$28,914.90
Total Tax Paid	$54,115.72	$50,380.12	$55,414.90
Effective Tax Rate	54.12%	50.38%	55.41%
Net Personal Cash	**$45,884.28**	**$49,619.88**	**$44,585.10**

2.1.2 Passive Income

The passive income earned from investments inside the corporation are taxed differently than active income. Each form of investment income has an impact on notional accounts. Notional accounts are record-keeping accounts that are created by corporations to keep track of certain pools of money with unique tax attributes. We have already seen an example of a notional account in Section 2.1.1 with GRIP. GRIP is a notional account that keeps track of how much in eligible dividends can be paid out by the corporation. The following subsections will outline the different types of passive income that a corporation can expect to receive, and how that income can be passed through the corporation into the hands of the individual.

2.1.2.i Capital Gains

Capital gains are taxed similarly at the corporate level and the personal level. 50% of the realized capital gain is taxable. The non-taxable 50% of the gain increases the Capital Dividend Account. The CDA is a notional account that keeps track of the amount of capital dividends that can be paid out by the corporation. Capital dividends are distributed tax-free to the individual.

The taxable half of the realized capital gain is taxed in the corporation at a rate close to the highest personal capital gain rate for the province, 50.17% for Ontario. 30.67% of the taxable gain goes into the non-eligible refundable dividend tax on hand (nRDTOH) notional account. This 30.67% is tax that is paid upfront but is refunded at a rate of 38.33% per dollar of taxable dividend when the corporation issues a non-eligible dividend, resulting in an effective tax rate for the corporation of 19.5% (50.17% tax paid upfront minus the 30.67% refund) for the taxable half of the realized capital gain, or 9.75% of the entire gain. The caveat here is that a non-eligible dividend must be distributed to the individual to trigger the nRDTOH refund in the corporation; based on tax integration, we should expect the total taxes paid on a corporate capital gain that is flowed through to an individual to be similar to the taxes they would have paid had the gain been realized personally. Since notional accounts are simply record keeping accounts, they lose purchasing power each year due to inflation over time (more on this in Sec. 2.1.3).

2.1.2.ii Dividends Received from Other Canadian Corporations

Eligible and non-eligible dividends received from Canadian corporations are taxed favourably in the hands of a CCPC. A tax of 38.33%, Part IV tax, is paid upfront but increases the eligible/non-eligible refundable dividend tax on hand (eRDTOH/nRDTOH) notional account by the same amount. This results in the tax on Canadian dividends being fully recoverable once the CCPC distributes a sufficient dividend to trigger the refund. Additionally, the eligible dividend received by the corporation increases the GRIP account by the full amount of the dividend. Note that it would be extremely rare for a public Canadian corporation to distribute a non-eligible dividend unless it had a recent IPO. Typically, non-eligible dividends would be paid from a private Canadian corporation. For the purposes of this research, we are assuming that the CCPC invests in publicly traded assets, so we will assume that no non-eligible dividends are received from other Canadian corporations.

2.1.2.iii Other Passive Income

Foreign dividends, and interest income all fall in the category of other passive income. A tax of 50.17% is paid by the corporation upfront. Unlike Canadian dividends, the tax paid is not fully recoverable. The nRDTOH account is increased by 30.67% of the other passive income, resulting in 19.5% of non-recoverable tax - the same as the non-recoverable portion of the taxable half of a realized capital gain.

In the case of foreign dividends, the refundable tax starts at 30.67% but is further reduced based on the amount of foreign non-business income tax credit received. Assuming a 15% foreign withholding tax and an equivalent foreign non-business income tax credit, this will reduce the refundable tax from 30.67% to 18.77%.

Since asset location is beyond the scope of this paper, we have simplified the analysis to assume that foreign income is zero and the full 30.67% is refundable. Table 3 illustrates how a $100,000 capital gain, eligible dividend, other passive income, and foreign income flows through the corporation and into the hands of the individual.

Table 3: Flow of a $100,000 capital gain, eligible dividend, and other passive income through the corporation and into the hands of the individual. The final two rows show the net personal cash if the $100,000 was earned personally, along with the delta between the net personal cash if the $100,000 was earned personally vs. inside the corporation. Assuming an Ontario resident at the highest personal tax rate. Note that non-eligible dividends received from another Canadian corporation are beyond the scope of this work and would not be accurately captured by any columns in this table.

	Capital Gain	Eligible Dividend	Other Passive Income	Foreign Income
Corporate Income	$100,000.00	$100,000.00	$100,000.00	$100,000.00
Corporate Tax	$25,085.00	$38,330.00	$50,170.00	$50,170.00
Net Corporate Cash	$74,915.00	$61,670.00	$49,830.00	$49,830.00
CDA	$50,000.00	-	-	-
eRDTOH	-	$38,330.00	-	-
nRDTOH	$15,335.00	-	$30,670.00	$18,772.00
GRIP	-	$100,000.00	-	-
Personal Tax	$19,215.35	$39,340.00	$38,430.70	$38,430.70
Corporate Tax After Refund	$9,750.00	$0.00	$19,500.00	$31,398.00
Total Tax Paid	$28,965.35	$39,340.00	$57,930.70	$69,828.70
Effective Tax Rate	28.97%	39.34%	57.93%	69.83%
Net Personal Cash	**$71,034.65**	**$60,660.00**	**$42,069.30**	**$30,171.30**
Net Personal Cash (Personal Income)	**$73,240.00**	**$60,660.00**	**$46,470.00**	**$46,470.00**
Tax Loss on Integration	**$2,205.35**	**$0.00**	**$4,400.70**	**$16,298.70**

2.1.3 *Impact of Inflation on Notional Accounts*

If unused, nominal notional account balances are carried forward meaning that their purchasing power decreases annually by inflation. Assuming 2.3% inflation, Fig. 2 illustrates the decrease in purchasing power of a notional account worth $100,000 over a 50-year time horizon in real dollars. If for example, a CDA has a balance of $100,000, the difference between taking a capital dividend in year 1 vs year 50 results in a $68,759 reduction of the tax-free dividend in purchasing power. To fund the remainder of consumption, a non-eligible dividend would need to be distributed (assuming no GRIP available), leading to greater tax owed in the hands of the individual, and a larger dividend payout required to fund consumption.

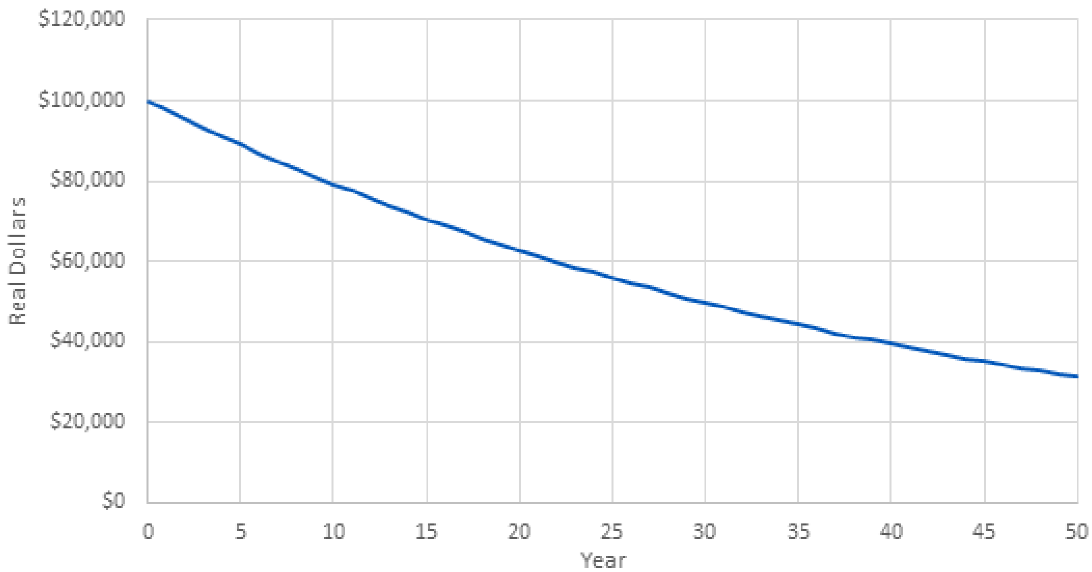

Figure 2: Decreasing purchasing power of $100,000 over a 50-year time horizon.

A cash flow analysis was performed to investigate the impact that the decreased purchasing power of the notional accounts has over time. Figure 3 shows the dividend required to fund an additional $100,000 of consumption for four different starting notional account values:

1. $100,000 CDA
2. $38,330 eRDTOH + $100,000 GRIP ($100,000 eligible dividend required to generate full refund)
3. $38,330 nRDTOH ($100,000 non-eligible dividend required to generate full refund)
4. $100,000 GRIP

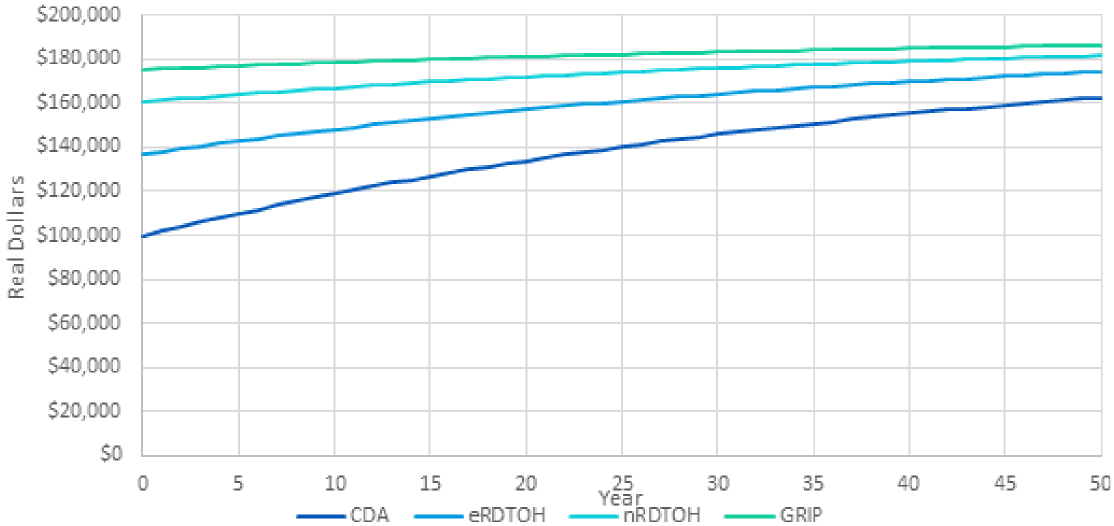

Figure 3: Dividend (net of tax refund) required to fund an additional $100,000 consumption for each of the four notional accounts (real dollars). Assuming the individual is in the highest marginal tax bracket (ON) for illustrative purposes only.

The loss of purchasing power impacts the CDA the most, followed by eRDTOH, nRDTOH, and finally GRIP. The CDA is hit the hardest because in the scenario where the starting CDA account balance is $100,000 and the other notional accounts are empty, the corporation can initially fund consumption completely tax-free in the hands of the individual. But as the CDA loses purchasing power over time, consumption must be funded using non-eligible dividends, which are taxed at a rate of 47.74% (assuming the individual is in the highest marginal tax bracket in Ontario in 2023). A similar phenomenon exists for the eRDTOH, as the purchasing power of the tax refund decreases over time. All 4 scenarios converge to a total dividend of $191,350, which is the total non-eligible dividend required to fund $100,000 of consumption with zero notional account balances.

The results of this analysis suggest prioritizing funding consumption by passing through dividends to reduce CDA, eRDTOH, nRDTOH, and GRIP balances in that order. Next, we need to consider whether this strategy of depleting notional account balances is more beneficial than funding consumption by drawing a salary to generate RRSP/IPP room.

2.2 Individual Pension Plans (IPPs)

Canada Revenue Agency (CRA) has defined an IPP as a pension plan with less than four members, with at least one of whom are related[31] to the employer [2]. Industry usage of the term IPP predates the CRA definition and refers to plans for individuals that own at least 10% of the shares of a corporation. For the purpose of this paper, the industry definition of the term IPP will be used. The IPP is designed to offer the maximum pension benefits of a defined benefit (DB) pension permitted under the Income Tax Act. Despite appearing in some ways similar to the RRSP, the way IPP contributions and benefits are calculated are drastically different due to their DB structure. This can lead to IPP contributions being significantly higher than the maximum RRSP contribution under certain conditions.

[3] Related meaning the person, or group of related persons who control the company.

All IPP contributions are made by the corporation with corporate dollars that are tax deductible to the corporation. This is different than RRSP contributions that are tax deductible to the individual. Without an IPP, in the case where a corporation pays a salary of $175,833, the RRSP contribution would be tax deductible, leading to a net salary of $145,053 (assuming $30,780 RRSP contribution, ignoring all other deductions for the purpose of this example).

Contrast this to the IPP case, where the $175,833 salary is paid to the individual, and an additional IPP contribution is made by the corporation. This would lead to $175,833 net salary for the individual (no personal deduction), and >$200k deduction for the corporation (salary + IPP contribution). For individuals with low levels of consumption, this would lead to increased accumulation of personal assets compared to the RRSP strategy.

The subsequent sections will describe how to model IPP funding with the detail required to perform the analysis herein; however, by law, a corporation with an IPP is responsible for obtaining an actuarial valuation of the IPP every 3 years.

2.2.1 Setting Up an IPP

IPPs can be established at any age between 18-71; however, it is generally most beneficial to establish an IPP when the maximum IPP contribution limit exceeds the RRSP contribution limit due to the carrying costs associated with an IPP (estimated in our model at ~$2k/yr) and the ability to purchase past years of service (more on this in Sec. 2.2.2.i).

The cost to purchase past service and the total past service benefit is calculated using the following methodology, beginning with the first year of service to be purchased:

1. Project the salary earned in the year of purchase forward to age 65, S_{65}, assuming a 5.5% yearly salary increase as defined by the ITA.

2. Project the current DB limit (1/9th the money purchase limit, $3,506.67 as of 2023) [3] forward to age 65, DBL_{65}, using a 5.5% annual increase as defined by the ITA.

3. Calculate the IPP benefit generated by the year of purchase, IPP_{Bi}, defined in Eq. 2.

$$IPP_{Bi} = \min\left(S_{65} * 0.02, DBL_{65}\right) \tag{2}$$

4. Calculate the cost to purchase an annuity at age 65, IPP_{Ci}, that would provide the IPP benefit calculated in Step 3, IPP_{Bi}, as defined in Eq. 3

$$IPP_{Ci} = IPP_{Bi} * AF \tag{3}$$

5. Determine the past service funding as the present value of the annuity, PVA_i, calculated in Step 4 using Eq. 4.

$$PVA_i = \frac{IPP_{Ci}}{(1+i_{IPP})^n} \tag{4}$$

where i_{IPP} is the nominal growth rate of the annuity (7.5% as defined by the ITA), and n is the number of years until age 65 (65 – current age).

6. Repeat Steps 1-5 for each year of past service purchased.

7. Calculate the sum of Step 3 for each year of purchase to determine the total IPP benefit, IPP_{Bt}, as given by Eq. 5.

$$IPP_{Bt} = \sum_{i=1}^{YP} IPP_{Bi} \tag{5}$$

where YP is the number of years of past service to be purchased.

8. Calculate the sum of Step 5 for each year of purchase to determine the total cost of purchase.

$$PVA_t = \sum_{i=1}^{YP} PVA_i \tag{6}$$

where PVA_t is the present value of the total annuity or the total cost of past service funding.

The source of the past service funding consists of two components: the RRSP transfer (Past Service Pension Adjustment (PSPA)) and the CCPC transfer, CCPCT. The PSPA is the total RRSP amount required to purchase the past service. There are two methods to calculate PSPA, the primary method, $PSPA_p$, and the alternative method, $PSPA_a$. The PSPA used is the greater of the two methods.

The primary PSPA calculation method sums together the PSPA for each year of past service. Each year of past service has a Pension Credit and a Pension Adjustment calculated as if the benefit for the particular past year was earned in the current year. The yearly PSPA, $PSPA_i$, for a standard IPP is the lesser of the current year's Money Purchase (MP) limit less \$600, and 18% of T4 employment income less \$600. This is described in Eq. 7[4].

$$PSPA_i = \min(MP - 600, (0.18 * EI_{T4}) - 600) \tag{7}$$

The sum of each year's PSPAi gives the total PSPAp. This is illustrated in Eq. 8, for m years of past service.

$$PSPA_p = \sum_0^m PSPA_i \tag{8}$$

[4] Note that there are some exceptions in the early 1990's where PSPAi may be lower than what is calculated using Eq. 7.

The alternative PSPA ($PSPA_A$) is the sum of the Qualifying Transfer, QT, and the unused RRSP contribution room sacrificed ($rrsp_R$). In layman's terms, the Qualifying Transfer is equivalent to the fraction of the number of years of past service purchased, YP, to the number of years that the individual has been working age, multiplied by the value of their RRSP. This is defined in Eq. 9, where $rrsp_V$ is the current value of the RRSP[5].

$$PSPA_a = rrsp_V * \min\left(1, \frac{YP}{min(35, age-18)}\right) + rrsp_r \tag{9}$$

The total PSPA is the greater of the primary and alternative PSPA calculations, illustrated by Eq.10.

$$PSPA = \max\left(PSPA_p, PSPA_a\right) \tag{10}$$

The remainder of the past service funding will be sourced from the corporation. The CCPCT is defined in Eq. 11. The CCPCT is tax deductible to the corporation.

$$CCPT = PVA_T - \text{MIN } (PVA_t, PSPA) \tag{11}$$

2.2.2 Determining Annual IPP Contributions

Annual IPP contributions are determined in a similar manner to past service funding as outlined above. The process is simplified because we are only concerned with purchasing a single year of service. The methodology is summarized as follows:

1. Project current salary forward to age 65 assuming a 5.5% annual salary increase.
2. Project the current DB limit forward to age 65 assuming a 5.5% annual increase.
3. Calculate the added IPP benefit from the current year of service using Eq. 2.
4. Calculate the cost to purchase an annuity that would provide the added IPP benefit using Eq. 3.
5. Determine the present value of the annuity using Eq. 4. This is the annual IPP contribution room.

As with the case of CCPCT for past service funding, all annual IPP contributions, set-up, management, and maintenance costs are tax deductible to the corporation.

[5] Note that rrspV used in Eq. 9 would consist not only of the value of the RRSP, but also any LIRA, RRIF, LIF accounts along with DC Pensions. This is referred to as the Designated Savings Arrangement (DSA) by the CRA.

2.2.2.i IPP Contribution Room Example

The maximum annual IPP contribution for an individual aged 35-65 is summarized in Tab. A1. Figure 4 compares the maximum annual RRSP contribution room with the maximum annual IPP contribution room as calculated in Tab. A1 in real dollars, assuming RRSP contribution limit grows with inflation. From our analysis, it is evident that increased IPP contribution room beyond what is available with the RRSP does not occur until age 37. When IPP administrative fees are considered, the added IPP contribution room net of fees does not surpass the RRSP until over age 40. Please consult with a licensed actuarial firm to determine the IPP contribution for your specific scenario as these results are for illustrative purposes only.

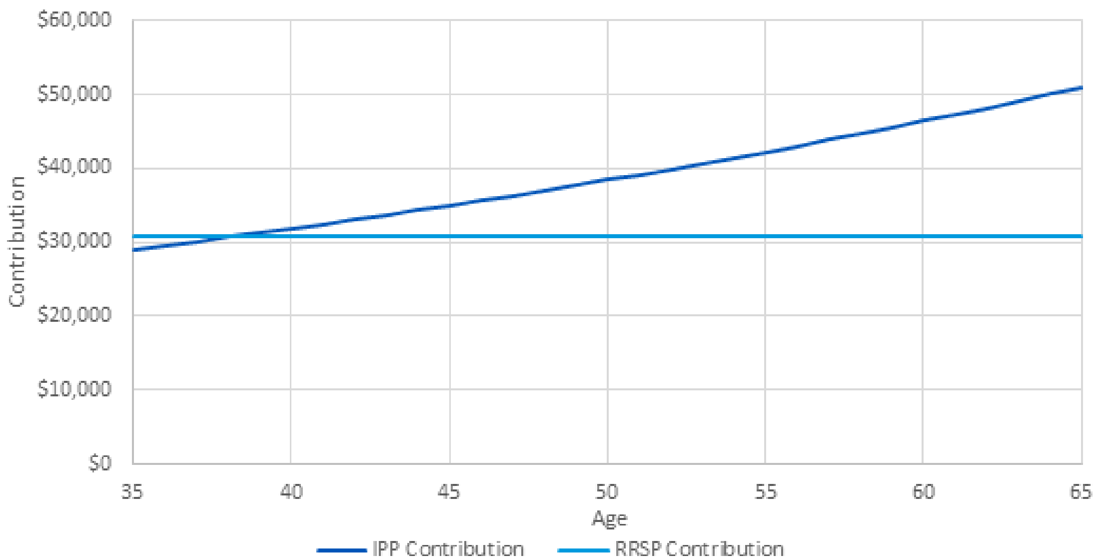

Figure 4: RRSP vs IPP maximum contribution as a function of age in real dollars. Note that this calculation is for illustrative purposes only, please consult with a licenced actuary to determine your individual contribution room.

It is evident in Fig. 4 that in the years leading up to age 65, the IPP contribution room significantly outpaces the RRSP contribution room, topping out at 70% more contribution room at age 65. The reason for this is due to how the IPP contribution is calculated: as the present value of the annuity required to fund the added benefit in retirement. The same logic that results in life insurance being more expensive to purchase as you age results in an annuity being more expensive to purchase as you age. The older you are, the closer you are to the retirement age of 65, meaning the cash you use to purchase the annuity has less time to grow before the payments begin and you will need to pay more for the same benefit. Since IPPs have a fixed benefit (2% of salary up to the DB limit), the contribution will have to increase with age to fund the required benefit. For ages less than 37, the IPP contribution has decades to grow into the required benefit, meaning that the contribution ends up being a fraction of what it is in the years leading up to retirement and less than the maximum RRSP contribution.

For these years, the corporation can choose to structure the IPP as a defined contribution plan, instead of as a defined benefit plan as we have discussed so far. The defined contribution structure would allow the corporation to contribute up to the maximum RRSP contribution for the individual. However, there is no added benefit to the IPP over the RRSP when the defined contribution structure is used. The corporation would be responsible for the carrying costs associated with the IPP (~$2k/year) without receiving any obvious benefit. If an IPP is established at a later date, the corporation can choose to purchase the years of past service. Therefore, the general recommendation is to avoid setting up an IPP until after age 40+, with the timing of the start-up not being critical as the individual can purchase years of past service and the IPP is indexed to a prescribed growth rate regardless of the performance of the underlying investments (more on this in Sec. 2.2.3).

2.2.3 Contribution Holiday/Top-Up

As mentioned at the beginning of Sec. 2.2, an actuarial valuation of the IPP must be performed every 3 years. The actuarial valuation serves to compare the realized performance of the IPP against its expected return benchmark defined by the ITA. A common misconception about IPPs is that the expected return benchmark is 7.5%. While it is true that the ITA defines the expected investment return to be 7.5%, it also defines expected wage growth to be 5.5%. Therefore, the expected return benchmark is more accurately expressed as wage inflation + 2%. When the actuarial valuations are performed every three years, the performance of the investment portfolio is benchmarked against the realized inflation over the past three years + 2%. For the purposes of this research, we assume that wage growth is equal to inflation + 1% [4]. Using PWL's expected inflation assumption of 2.3% [5], this gives an expected wage inflation of 3.3%. Therefore, the expected return benchmark of expected wage inflation + 2% becomes equal to 5.3%.

At the three-year actuarial valuation, the IPP is assessed against the 5.3% expected growth rate. There are three possible outcomes: the IPP is tracking the benchmark and contributions continue normally, the IPP is outperforming its benchmark plus a 25% excess surplus and contributions must be paused for what is referred to as a 'contribution holiday', or the IPP is trailing its benchmark and additional contributions can be made[6].

In the case of the IPP outperforming its benchmark plus a 25% excess surplus the IPP must take a contribution holiday – meaning that IPP contributions are paused until the IPP returns to its expected return benchmark plus the excess surplus. For example, if the 3-year valuation results show that the IPP should be valued at $100k, adding the 25% excess surplus would give a maximum value of $125k before contribution holidays are required. If the IPP is valued at $135k, it is $10k above the excess surplus amount and the subsequent IPP contribution will be reduced by $10k. If the outperformance is greater than the subsequent IPP contribution, then no IPP contribution will be permitted that year (hence the term contribution holiday).

[6] Note that the removal of minimum funding requirements for IPPs is what allows for the additional contributions to be optional. This applies to all provinces except for Saskatchewan, Newfoundland, the Northwest Territories, Nunavut, and Yukon where minimum funding requirements still apply, and the additional contributions are mandatory.

This contribution holiday continues until the total sum of the missed contributions reaches the outperformance amount. If the outperformance amount is >$100,000 for example, depending on the age of the individual, IPP contributions may be on pause for the full 3-year period until the next actuarial valuation, where the actuary will re-assess the performance of the IPP against its benchmark and determine if another contribution holiday is necessary, or if a top-up is possible.

In Ontario and most other provinces[7], for the case of the IPP underperforming its expected return benchmark, additional IPP contributions can be utilized to bring the value of the IPP back to its benchmark. The big difference between the top-up and the holiday is that while holidays are forced, top-ups are not. The individual can choose to make additional contributions to the IPP. The additional contributions are treated in the same manner as regular annual contributions – they are tax deferred, meaning they are tax deductible to the corporation and taxed in the hands of the individual but not until the benefit is paid out during retirement. The flexibility in choosing to contribute the additional top-up is a relatively new feature of the IPP – and one that makes the IPP a lot more attractive. Consider that previously IPPs were required by law to be fully funded, as with all other DB pension plans in Canada.This would force the CCPC to make additional contributions during times where cash flow is often most difficult to come by – during market downturns. This added flexibility of contribution top-ups has allowed for IPPs to be under consideration for a much wider audience of individuals with a CCPC beyond those whose active business income is typically unaffected by market downturns (such as physicians).

Figure 5 illustrates hypothetical IPP contributions for a 30-year-old contributing to an IPP until age 65[8]. The red line represents the IPP growing at the historical S&P 500 rate of return from 1986-2021, assuming all available top-ups are contributed to the IPP. The yellow bar chart represents the IPP contributions made, and the green dashed line represents the theoretical contributions prior to any top-ups or holidays. The red vertical lines reoccurring at the 3-year mark indicate when the IPP is assessed by an actuary and additional top-ups/contribution holiday are generated. The blue line represents the theoretical 5.3% growth rate curve, with the blue dashed line representing the theoretical growth rate curve plus the 25% excess surplus. Notice at ages 33, 36, 39, 42, 45, 51, 57, 60, and 63 the realized performance of the IPP is greater than the theoretical growth rate plus the 25% surplus and is followed up by reduced IPP contributions in the subsequent years. At ages 54, the IPP lags the theoretical growth curve, and additional IPP top-up room is generated. Age 52 aligns with the 2008 stock market crash, knocking the IPP significantly off target. By the time the next assessment comes around at age 54, the IPP lags the theoretical growth curve by ~$150k, generating a significant top-up opportunity. In this case, the individual has the funds to take advantage of the opportunity, and as a result has an IPP balance ~$4M in excess of the theoretical growth curve at age 65 due to strong S&P 500 performance from 2009-2021.

[7] All provinces except for Saskatchewan, Newfoundland, the Northwest Territories, Nunavut, and Yukon.

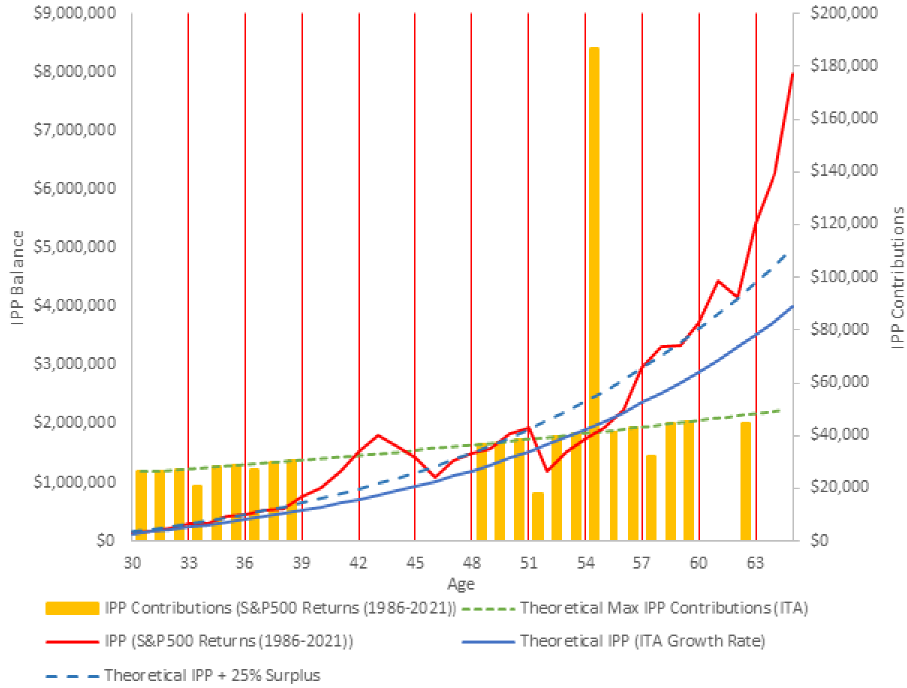

Figure 5: Hypothetical performance of an IPP generated in 1986 and invested in the S&P 500 until 2021.

[8] Note that this example was meant to illustrate the concept of contribution holidays and additional top ups when variable investment returns are applied. It is not meant to be an illustration of the performance of an IPP during the 1986-2021 time period, as the expected wage inflation of 3.3% was applied to provide an illustration consistent with the projections of the research herein.

2.2.3.i PWL Expected Return Considerations for IPP Holidays/Top-Ups

Table 4 compares PWL's expected return assumptions (as of January 2022) [5] with the 5.3% IPP growth rate. A global equity portfolio consisting of equal amounts of Canadian, US, and International equity is expected to outperform the 5.3% benchmark by 132 bps. However, the 5.3% IPP growth rate exceeds the nominal PWL expected return assumption for all fixed income asset classes. An investor that has a lower risk tolerance and invests in a 50/50 portfolio of global equity/fixed income is expected to underperform the 5.3% benchmark by 75 bps.

The implication will be that a constant return (straight-line) simulation will consistently allow for additional IPP contributions to be made every 3 years for an individual with a 50/50 asset allocation. For individuals with higher risk tolerances, additional IPP contributions will not be available during constant return simulations. However, due to the allowed 25% excess surplus, contribution holidays will not be required.

When performing a Monte Carlo analysis for an individual with a 50/50 asset allocation, there will not always be additional IPP contribution room available every 3-years, but on average, there will be additional contribution room available more often than not. A Monte Carlo analysis performs many parallel simulations of the analysis with differing return series to account for investment risk. At each year of a simulation, a realized return is sampled from a normal distribution based on the expected return and the standard deviation of the investment portfolio.

In our case, this is repeated for each year of the analysis for 1000 parallel simulations. This allows for a distribution of outcomes to be generated, along with a Monte Carlo success rate, defined as the percentage of outcomes ending with a final net worth greater than zero. The fluctuations of realized returns in the Monte Carlo analysis is why there is not always additional IPP contributions available every 3-years. Some 3-year periods will realize higher than expected returns, but more often than not additional IPP contributions would be available. On the contrary, Monte Carlo simulations for individuals with high risk tolerances (70-100% equity exposure), would have no additional IPP contributions available on average, but in years with low realized returns additional contributions may be available, or in years with high realized returns contribution holidays may be required.

The frequency of additional contribution room is inversely proportional to the individuals risk tolerance. This is not a flaw of either PWL's expected return model, or the ITA's prescribed growth rate. The Monte Carlo analysis is accurately capturing PWL's expectations, that is, additional IPP contributions will be available more often than not for a 50/50 investor, with decreased frequency for increased risk tolerance.

Table 4: PWL Expected Return Assumptions [5].

Asset Class	Geometric Expected Nominal Return (Jan 2022)
Cash	0.91%
Short Term Fixed Income	1.93%
Fixed Income	2.48%
Canadian Equity	6.58%
US Equity	6.25%
International Equity DV & EM	7.03%
Global Equity 33-33-33	6.62%
Global Equity/Fixed Income 50/50	4.55%
IPP	5.3%

2.2.4 Terminal Funding

Terminal funding is an optional feature of IPPs whereby an additional lump-sum is contributed to the IPP at retirement. The primary advantage to those retiring at age 65 is a pension that is fully indexed to CPI. Without terminal funding, the pension benefits are indexed to CPI – 1%, so purchasing power will decrease over time. For early retirees, terminal funding also allows for an early retirement pension with no reduction and bridge benefits.

The optional terminal funding (TF) contribution amount can be calculated using Eq. 12 for a 65-year-old retiree

$$TF = IPP_{Bt}\,(AF_E - AF) \tag{12}$$

where AF_E is the enhanced annuity factor of 25.2429[9] and AF is the regular annuity factor of 14.5323. Using Eq. 12, for an IPP benefit of \$100,000, the terminal funding amount would be \$1,071,060.

Note that there may be additional contribution top-ups available at the beginning of retirement as described in Sec. 2.2.3. These contributions will not provide enhanced benefits, as they only fund the IPP to the level required to provide traditional benefits.

2.2.5 IPP During Retirement

During retirement, there are three options for funding the IPP benefits: maintaining the IPP during retirement and distributing benefits from the IPP, commuting the value of the IPP to the RRSP, and purchasing an annuity to fund the IPP benefits.

2.2.5.i Maintain IPP

Maintaining the IPP is simplest option, with one primary benefit and a couple of drawbacks. The benefit is that the IPP can continue to be funded during retirement. This is most beneficial for individuals that do not fully retire, resulting in the corporation maintaining some level of active business income in retirement. The added IPP contributions increase the likelihood that the IPP will remain fully funded and the IPP benefit will continue for the duration of retirement. This ties into the first drawback, the possibility of the IPP benefit not lasting for the duration of retirement. This is a drawback of the RRSP as well and can be avoided in both cases with the purchase of an annuity. The second drawback is that the carrying costs of ~$2k/yr will remain for as long as the IPP remains funded.

The benefit received by the individual is taxed as income and is eligible for pension splitting as early as age 50. After age 71, the benefit becomes the greater of the benefit as defined at retirement, and the IPP minimum amount – which is calculated as if the IPP were a RRIF.

2.2.5.ii Commute IPP to RRSP

Another option is to commute the value of the IPP to the RRSP. This has the advantage that the IPP structure is no longer in place, so carrying costs no longer apply. The downside is that only a percentage of funds can be transferred into the RRSP on a tax deferred basis, there will be immediate tax implications for the remaining funds.

The maximum RRSP transfer, $rrsp_{MT}$, at age 65 can be calculated using Eq. 1

$$rrsp_{MT} = \mathrm{IPP}_{Bt} * rrsp_{MTF} \tag{13}$$

[9] For a 65-year old retiree with a same age spouse using bond rates as of December 2022. Note that the enhanced annuity factor used to calculate terminal funding is a function of bond rates, date of birth, and spouse age, and therefore will fluctuate over time. The non-terminal funding annuity factor of 14.5323 does not depend on these factors and will not fluctuate over time, unless the assumptions from CRA are modified.

where $rrsp_{MTF}$, is the RRSP maximum transfer factor of 12.4. For a $100,000 IPP benefit, the maximum transfer would be $1.24M. Assuming that the IPP is fully funded at age 65 with no enhanced benefits ($100,000 * 14.5323 = $1,453,230), this would lead to a $213,230 cash payout which would be immediately taxable as income in the hands of the individual[10].

2.2.5.iii Purchase Annuity

The third and final option guarantees that the IPP benefit will continue for life like a traditional employer sponsored DB plan. In this case, the amount required to purchase an annuity that provides the same IPP benefit that the IPP would have is transferred to the annuity provider. This is a tax deferred transaction; no taxes are owed upfront and income tax is payable on the annuity benefit. If there is cash left over inside the IPP that is not required to purchase the annuity, it must be paid out in cash. However, the cash payout is typically less than the cash payout in the RRSP transfer case. If the annuity costs more than the cash available inside the IPP, the corporation will need to fund the remainder. This added contribution would be tax deductible to the corporation

The optimal retirement option will vary depending on the individual situation. For example, corporations with fully funded IPPs and a business that continues to earn active business income during retirement would be more likely to maintain the IPP. In contrast, corporations with an underfunded IPP that are not earning active business income in retirement would be more likely to take the commuted value of the IPP. For the purposes of this research paper, we will examine a single case study where the corporation does not continue to earn active business income in retirement. For this reason, the results may favour taking the commuted value of the IPP at retirement. It is important to note that the optimal strategy may be different in cases where active business income continues during retirement, but that is outside the scope of this research.

2.2.6 IPP At Death

2.2.6.i With a Surviving Spouse

If the sponsoring corporation is still in existence after death, the spouse must receive a minimum survivor pension of 60% of the benefit unless they waive their entitlement ahead of time. On the death of the spouse, the remaining benefits would be payable to the spouse's estate or any remaining survivors. If the corporation is wound up at death, the spouse can either transfer 100%[11] of the remaining funds to an RRSP or purchase an annuity.

2.2.6.ii Without a Surviving Spouse

The beneficiary will inherit the IPP funds as a lump sum cash payment that is taxable to the beneficiary immediately. The beneficiary can either be named directly in the IPP, or in the plan member's will.

[10] As with all other calculations involving IPPs, an actuary is responsible for performing this calculation and the assumptions will change on a case-by-case basis. This example is for illustrative purposes only.

2.3 Estate Planning Strategies for Individuals with a CCPC

Without proper tax planning, three layers of income tax (otherwise known as triple taxation) at death is the unfortunate reality for many individuals with a CCPC. Additionally, estate administration tax (otherwise known as probate) can apply to the deceased individual's estate. In Ontario, estate administration tax can be up to 1.5% of the value of the estate. Despite the existence of a variety of estate planning strategies to avoid estate administration tax, this research will focus on estate planning strategies aimed at avoiding triple taxation as the impact of these strategies are more pronounced. The following section summarizes the triple taxation case, along with two different estate planning strategies aimed at avoiding triple taxation.

2.3.1 Default Case (Triple Taxation)

Without proper estate planning, three separate layers of taxation are applied upon the death of an individual with a CCPC. The three layers of tax are summarized below.

2.3.1.i Deemed Disposition of HoldCo Shares

At death, there is a deemed disposition of the shareholder's shares of the holding company at fair market value, FMV. The adjusted cost base (ACB) of the shares is often a nominal amount (say $10). The ACB of the shares was specified at the time that the holding company was founded and has nothing to do with the cost base of the investments inside the corporation. As a result, the deemed disposition will lead to nearly one-half of the value of the shares included as a capital gain on the shareholder's terminal tax return.

For example, say the only shareholder of a holding company that contains an investment portfolio worth $10,000,000 passes away. The value of the shares of the holding company would be equal to the value of the investments. With a nominal ACB of $10, $4,999,995 would be added to the shareholder's terminal tax return as a capital gain. For simplicity, assuming the individual will be taxed at the highest marginal rate (53.53%) on their terminal tax return, this layer of tax generates a **$2.676M** tax bill. This is summarized in Tab. 5.

[11] Assuming that the IPP assets are less than the commuted value of the pension benefit. This is less likely to occur in cases where the member selects to have 2/3 of the pension benefit continue to the spouse, because the commuted value would be based on only 2/3 of the benefit. Additionally, if terminal funding is engaged at retirement, typically the IPP assets would be much larger than the commuted value of the pension benefit. In these cases, IPP assets up to the commuted value can be transferred to the registered account of the spouse, with the remainder being treated as taxable income.

Table 5: Calculation of capital gain tax on the deemed disposition of HoldCo shares.

	Capital Gain Tax
HoldCo Fair Market Value	$10,000,000
HoldCo Adjusted Cost Base	$10
Capital Gain	$9,999,990
Taxable Half of Capital Gain	$4,999,995
Shareholder Personal Taxes Owed (53.53% Tax Rate)	**$2,676,497**

2.3.1.ii Capital Gain From Investments Inside CCPC

Additionally, to access the value of the CCPC at the time of death, the investments inside the holding company must be liquidated. If the investments are in a gain position, capital gains will be owed at the corporate tax rate. 50% of the capital gain is added to the CDA and can be distributed tax-free. The other 50% is taxable at a rate of 50.17%. However, 30.67% of the taxable half will be refundable when the CCPC distributes a non-eligible dividend (non-eligible refundable dividend tax on hand). As a result, the non-recoverable portion of the tax is 9.75% of the total capital gain ((50.17% - 30.67%) / 2).

Continuing with the example above, assume that the $10M investment portfolio has an ACB of $5M. This means that $2.5M would be added to the CDA, and the other $2.5M taxed as investment income. The initial tax bill will be $2.5M * 50.17% = $1,254,250. The recoverable portion will be 2.5M * 30.67% = $766,750. Therefore, the net tax owed due to the second layer of tax will be $1,254,250 - $766,750 = $487,500 (or $5M * 9.75%). This is summarized in Tab. 6.

Table 6: Calculation of corporate tax on the sale of the HoldCo investment portfolio.

	Corporate Tax
HoldCo Investment Portfolio Fair Market Value	$10,000,000
HoldCo Investment Portfolio Adjusted Cost Base	$5,000,000
Capital Gain	$5,000,000
Tax-Free Half of Capital Gain (CDA)	$2,500,000
Taxable Half of Capital Gain	$2,500,000
Taxes Owed From Capital Gain (50.17% Corporate Tax Rate)	$1,254,250
Recoverable Portion (neRDTOH) (30.67% of Taxable Gain)	$766,750
Net Taxes Owed (After Refund)	**$487,500**

2.3.1.iii Liquidation Dividend

Following the deemed disposition, the beneficiary of the holding company inherits the shares. The new ACB of the shares for the beneficiary is equal to the deemed proceeds of the previous shareholder's disposition. However, for the beneficiary to wind up the holding company, they must distribute dividends from the corporation. These dividends are taxable in the hands of the beneficiary[12] at their personal tax rate. This is the third layer of taxation.

Continuing with the example, we started off with $10M of investments inside the holding company. After the first layer of tax, we were left with $7.324M. After the second layer of tax, we were left with $6.8365M. Assuming that all notional accounts were empty at the beginning of the example, we have $2.5M inside the CDA that can be distributed tax-free, but the remainder ($4.3365M) must be distributed as a non-eligible dividend. Assuming the highest personal tax rate of 47.74% for non-eligible dividends, another **$2.07M** tax bill is due. The total tax hit is $5.234M, giving a total effective tax rate of 52.34%. This is summarized in Tab. 7.

Table 7: Calculation of personal tax on the distribution of dividends from the holding company.

	Personal Tax
HoldCo Investment Portfolio Fair Market Value	$10,000,000
Shareholder Personal Taxes Owed (53.53% Tax Rate)	$2,676,497
Net Taxes Owed (After Refund)	$487,500
HoldCo After-Tax Value Prior to Wind-Up	$9,512,500
Capital Dividend	$2,500,000
Non-Eligible Dividend	$7,012,500
Personal Taxes Owed From Non-Eligible Dividend (47.74% Tax Rate)	$3,347,767
Total Taxes Owed (sum of layers 1 – 3)	**$6,511,764**
Beneficiary Net Cash	**$3,488,236**

2.3.2 Loss Carry Back Strategy (ITA 164(6))

This strategy effectively eliminates the first layer of taxation by carrying back the capital loss that the estate realizes from winding-up/redeeming shares of the corporation within its first tax year to the deceased individual's terminal tax return. Subsection 164(6) of the Income Tax Act was written to allow for this tax exemption to take place. Therefore, minimal auditing risk is involved as long as the carryback occurs within the first 12 months of the death of the individual.

[12] Note that alternatively the estate could be the shareholder of the corporation. In this case, the estate would receive the liquidation dividend and pay taxes accordingly.

In the example above, the initial $2.676M tax bill would be eliminated. As a result, the holding company would have $9.5125M to distribute to the beneficiaries with a CDA balance of $2.5M. $7.0125M would be distributed to the beneficiary as a non-eligible dividend, and assuming the highest personal tax rate of 47.74%, a $3.3478M tax bill would be due. This brings the total tax owed to $3.835M, with an effective tax rate of 38.35%. This is a savings of $1.4M, and a 14% lower effective tax rate than the triple taxation case. This is summarized in Tab. 8.

Table 8: Calculation of total taxes owed using the Loss Carryback Strategy.

	Total Taxes Owed
HoldCo Investment Portfolio Fair Market Value	$10,000,000
Shareholder Personal Taxes Owed (53.53% Tax Rate)	$0
Net Taxes Owed (After Refund)	$487,500
HoldCo After-Tax Value Prior to Wind-Up	$9,512,500
Capital Dividend	$2,500,000
Non-Eligible Dividend	$7,012,500
Personal Taxes Owed From Non-Eligible Dividend (47.74% Tax Rate)	$3,347,768
Total Taxes Owed (sum of layers 1 – 3)	**$3,835,268**
Beneficiary Net Income	**$6,164,733**

2.3.3 Pipeline Strategy

This strategy effectively eliminates the third layer of taxation. This can result in the greatest tax savings; however, is the costliest in terms of complexity, estate wind-up time, and audit risk. The strategy works as follows:

1. The individual pays capital gains tax on the deemed disposition of Holdco Shares (tax layer 1).
2. The estate inherits the shares at a new ACB equal to the disposition.
3. The estate incorporates a new company and sells the shares of the old company for a promissory note. No further personal or corporate tax would be payable because the transaction occurs at the new ACB which should be equal to the value of the shares and promissory note received as consideration for the sale.
4. After a period of time[13], the two companies then amalgamate, leaving the assets of the new company available to repay the promissory note tax-free.

By jumping through these hoops, the funds can be distributed to the individual tax-free, which often leads to the largest tax savings. Continuing our example, the $2.676M and the $487,500 tax bills from layers 1 and 2 would be payable, creating a total tax bill of $3.164M and an effective tax rate of 31.6%.

This is a $671,271 (6.71%) tax savings compared to the loss carryback strategy, and a $2.07M (20.7%) tax savings compared to the triple taxation outcome.

There is also the possibility of "bumping" the ACB of the corporation's investments during the amalgamation process (Step 4). In our example, this would bump the ACB of the underlying shares to $10M, meaning that only tax layer 1 would be payable. The pipeline strategy is summarized in Tab. 9 with and without the "bump".

Note that the use of permanent insurance can be used to increase the tax efficiency of the estate but the discussion on its impact to the shareholder's sustainable spending rate and the after-tax final net worth of the estate warrants further discussion that is outside of the scope of this work.

Table 9: Calculation of total taxes owed using the Pipeline Strategy with and without the ACB "bump".

	Pipeline w/o "Bump"	Pipeline w/ "Bump"
HoldCo Investment Portfolio Fair Market Value	$10,000,000	$10,000,000
Shareholder Personal Taxes Owed (53.53% Tax Rate)	$2,676,497	$2,676,497
Net Taxes Owed (After Refund)	$487,500	$0
HoldCo After-Tax Value Prior to Wind-Up	$6,836,003	$7,323,503
Capital Dividend (Accessible)	$0[14]	$0
Non-Eligible Dividend	$0	$0
Personal Taxes Owed From Non-Eligible Dividend (47.74% Tax Rate)	$0	$0
Total Taxes Owed (sum of layers 1 – 3)	**$3,163,997**	**$2,676,497**
Beneficiary Net Cash	**$6,836,003**	**$7,323,503**

3. Methodology

This work aims to quantify the performance of a variety of compensation strategies for individuals with a corporation under a variety of circumstances. The following subsections describe the approach taken to do so.

3.1 Analysis Types

Two analysis types were utilized: a straight-line simulation and a Monte Carlo simulation. The straight-line simulation assumes that the expected return for each asset class is realized each year.

[14] Note that the $2.5M capital dividend would still be generated but would not be accessible when using the pipeline strategy with the full $10M FMV of the corporate investment portfolio at the time of death. Note that a combination of the Pipeline and 164(6) Loss Carry Back strategies could be used to minimize the total taxes owed by accessing the $2.5M of CDA generated, but that is beyond the scope of this work.

The Monte Carlo simulation samples from a normal distribution to generate a realized return for each year of the simulation and performs multiple simulations to generate a range of possible outcomes. One thousand iterations were performed for the Monte Carlo analysis such that an adequate distribution of outcomes was analyzed.

3.2 Evaluation Metrics

Two primary evaluation metrics were considered for this work, one for each analysis type. For the straight-line simulation, the final net worth, FNW, metric was analyzed. This represents the mean expected final after-tax net worth at the end of the simulation in today's dollars. To determine the final after-tax net worth, a terminal tax return was filed on behalf of the individual. A deemed disposition occurred at the time of death meaning that all assets remaining in an RRSP/IPP were added as taxable income on the terminal tax return and all unrealized capital gains in a non-registered account were realized. Corporate tax was calculated assuming that Loss Carry Back Strategy (ITA 164(6)) estate planning strategy was carried out. This evaluation metric is useful for multi-generational planning, as it maximizes the estate. For the Monte Carlo analysis, sustainable spending, SS, was analyzed. Sustainable spending represents the maximum spending amount possible while maintaining a Monte Carlo success rate of ≥90%. A successful Monte Carlo outcome is defined as one which can fund consumption for the duration of the simulation while finishing with a net worth >$0. This objective prioritizes consumption under uncertainty over the course of one's lifetime.

To systematically analyze this problem, a multi-objective problem statement with weighting factors w_1 and w_2 was considered, as presented in Eq. 14[15]. At its extremes, the objective function f represents an individual that is only concerned with multi-generational planning when $w_1 = 1$ and $w_2 = 0$, and represents someone that is only concerned with maximizing personal consumption when w1 = 0 and $w_2 = 1$. Someone with some degree of concern for both objectives can be represented by any combination of w_1 and w_2 such that the some of the two weighting factors is equal to one.

$$f = (w_1 * FNW) + (w_2 * SS) \tag{14}$$

3.3 Simulation Parameters

3.3.1 Strategies

A case study was performed on a hypothetical small business owner who takes compensation through salary, dividends, or some combination (dynamic salary). In the case of taking salary, the business owner maximizes their RRSP or IPP contribution based on the salary taken, whereas in the case of dividends the RRSP and IPP are not funded due to no room being generated. With dynamic salary, dividends are taken opportunistically to deplete notional accounts, and salary is taken otherwise to generate RRSP/ IPP room. Note that in all scenarios the savings not directed to an RRSP/IPP or TFSA are retained in the CCPC and invested, except for in the case where net income less TFSA/RRSP contributions exceeds consumption due to low levels of consumption and high salary. In this edge case, personal funds left over after consumption is funded and registered accounts are maximized are invested in a personal taxable account.

[15] Note that the FNW and SS variables in Eq. 14 are normalized to their maximum values.

Seven strategies were required to explore all possible outcomes when considering salary and RRSP or IPP savings. The first strategy assumes that there is no IPP in place and the individual makes the maximum contribution to their TFSA and RRSP. The RRSP contribution amount depends on the amount of salary taken in the previous year, which varies from $0 to $175,833 or dynamically as described in Sec. 3.3.3.

1. TFSA/RRSP
2. TFSA/IPP maintained during retirement with terminal funding
3. TFSA/IPP maintained during retirement without terminal funding
4. TFSA/IPP commuted to RRSP at retirement with terminal funding
5. TFSA/IPP commuted to RRSP at retirement without terminal funding
6. TFSA/IPP used to purchase annuity at retirement with terminal funding
7. TFSA/IPP used to purchase annuity at retirement without terminal funding

Strategies 2 through 7 all assume that the IPP is set up at age 42 with benefits beginning at age 65. The six IPP strategies consider each of the three available paths taken in retirement as described in Sec. 2.2.5, along with the choice of terminal funding as described in Sec. 2.2.4. All six IPP analysis types assume that all available past service contributions are made. Like the RRSP case, the yearly IPP contribution depends on the salary taken in the previous year of the simulation. The $2k/yr carrying cost of the IPP is paid by the corporation in all years where the IPP structure is in place.

3.3.2 Fixed Variables

For this analysis, the following fixed assumptions were made:

- Age: 30
- Death Age: 95
- Ontario resident, not a US person (citizen or green card holder).
- CCPC Annual Revenue: $500,000
- Initial Account Values:
    - TFSA: $100,000
    - RRSP: $100,000
    - Taxable Account: $0
    - CCPC: $0
- Initial CCPC Notional Account Values:
    - eRDTOH: $0
    - nRDTOH: $0
    - GRIP: $0
    - CCPC: $0
- Initial Registered Account Contribution Room:
    - TFSA: $0
    - RRSP: $0
- Subsequent Registered Account Contributions:
    - TFSA: $6,500 (max indexed to inflation)
    - RRSP: salary * 0.18 up to $30,780 (indexed to inflation) if no IPP, $600 if IPP
- Constant spending in real dollars.
- CPP and OAS taken at age 65.
- Maximum OAS received.
- CPP benefits proportional to CPP contributions.
- 12 years of past service available to purchase.
- Salary at ages 18-30 assumed to be equivalent (in real terms) to the salary taken at age 30+.
- Estate planning strategy: Loss Carry Back Strategy (ITA 164(6) as defined in Sec. 2.3.2)

3.3.3 Degrees of Freedom

The following variables were assessed for a range of values:

1. Retirement Age: 45, 55, 65
2. Salary: $0, $175,833, dynamic salary
3. Monthly Spending: $6k-$16k in $2k increments
4. Asset Allocation: 50/50 and 100/0 of Equity/Fixed Income

The salary taken has a direct impact on the RRSP/IPP contribution amount, as specified in Sec. 3.3.2. The $0 and $175,833 salaries are assumed to be constant for all working years (18 to retirement age), resulting in constant RRSP and CPP contributions. In cases where the salary is beneath the maximum annual pensionable earnings ($66,600 for 2023 and inflation adjusted), CPP benefits are calculated based on the annual CPP contribution made, assuming that contributions were constant for all previous working years. Similarly, for the early retirement cases, CPP benefits are reduced if the number of working years from age 18 to the retirement age is less than 39.

In addition to the constant salary cases, an additional dynamic salary case was considered for each of the 7 strategies from Sec. 3.3.1. The dynamic salary case prioritizes minimizing notional account balances by taking dividends to deplete the notional accounts in the order of CDA, eRDTOH, nRDTOH, and GRIP as described in Sec. 2.1.3. Only if additional income was required to fund consumption (plus registered account contributions) a salary was taken. As a result, both CPP and RRSP contributions varied from year to year as the salary changed. CPP benefits were calculated based on the amount of CPP contributions during the simulation and assuming that the maximum CPP contribution was made in the working years prior to the simulation (ages 18-29). In all cases, if the salary generated an after-tax (and after registered account contributions) income greater than the spending level, the additional personal after-tax cash was invested in a personal taxable account.

The four variables generate 108 degrees of freedom (3x3x6x2) for each strategy. Considering the seven strategies listed in Sec. 3.2, the total degrees of freedom is 756. This means that for the idealized client with a corporation as described in Sec. 3.3.1, we investigated 756 financial planning outcomes with various retirement ages, salaries, spending levels, asset allocations, and RRSP/IPP strategies.

When taking variable returns into account as done in the Monte Carlo analysis, the number of financial planning outcomes increases by a factor of 1000 to 756,000.

When performing the sustainable spending analysis (see Sec. 3.3), the monthly spending increment was decreased to a minimum of $10 generating an uncertainty of ±$10. This increased the number of outcomes by another order of magnitude to over 7 million financial planning outcomes studied.

3.3.4 Computational Setup

This analysis was performed using a Microsoft Azure Standard_NC6 virtual machine with 6 vCPUs, 56 GB RAM, and an NVIDA Tesla K80 GPU with 2496 CUDA cores and 12 GB of GDDR5 VRAM. The python library numba was utilized to parallelize the Monte Carlo simulation across all available CUDA cores. As a result of the parallelization, the full analysis consisting of over 7 million financial plans was completed in approximately 20 minutes.

3.4 Expected Return Assumptions

The expected return assumptions presented Felix et al.'s 'Financial Planning Assumptions' are used for the straight-line simulation in this work [5]. Felix et al. provides the geometric expected returns for each asset class along with a detailed explanation of the methodology used to derive these values.

An arithmetic mean was required to define the return distribution used to sample from in the Monte Carlo analysis. A methodology consistent with Felix et al. was used to derive the arithmetic expected returns, replacing the geometric historical mean with the arithmetic historical mean where necessary. In the case of market-based expected return (MBER), the arithmetic expected return was not available (i.e., 1/CAPE generates a real geometric expected return).

Therefore, the geometric MBER was calculated by scaling up the arithmetic MBER by the historical ratio of geometric to arithmetic return from the Dimson, Marsh, Staunton (DMS) dataset [6].

Both the straight-line and Monte Carlo simulations were performed using real dollars. Considering the 50+ year time horizons evaluated in this work, real dollars were used to increase relatability and understanding of net worth and consumption metrics as they evolve over time. Where necessary, the expected inflation assumption of 2.3% from Felix et al. was considered for this work. Nominal expected returns can be converted to real expected returns using Equation 15

$$E_r(r) = \frac{(1+E_n(r))}{(1+E_i(r))} - 1 \tag{15}$$

where $E_r(r)$ is the expected real return, $E_n(r)$ is the expected nominal return, and $E_i(r)$ is expected inflation. Note that the often-used method of subtracting inflation off the nominal expected return is an approximation and this analysis required expected return values with high precision. For example, with an $E_i(r)$ of 7% and an $E_i(r)$ of 2%, Eq. 15 results in an expected real return of 4.9%, 10 bps lower than the 5% calculated with the simple approximation commonly referenced.

Table 10 illustrates the expected return assumptions used for the straight-line simulations and Monte Carlo simulations respectively. For the 100% equity analysis, all investments are assumed to be in a Global Equity portfolio with a 33% allocation to Canadian equity, US equity and International equity (developed markets plus emerging markets).

As noted earlier, we treated all dividends as regular income, ignoring the effect of foreign withholding tax on refundable taxes. For the 50/50 asset allocation, 50% of investments are assumed to be in the Global Equity 33-33-33 portfolio, and the remaining 50% in fixed income.

Table 11 summarizes the composition of the expected geometric return of the Global 33-33-33 portfolio. Note that since the analysis is performed in real dollars, the price appreciation of the Global equity fund is equal to the real return net of interest and dividends. Since the adjusted cost base decreases by inflation in real terms on a yearly basis, the resulting gain (in nominal dollars) is equivalent to the gain calculated using the nominal price appreciation and adjusted cost base.

Table 10: Expected Return Assumptions.

Asset Class	Geometric Expected Real Return	Arithmetic Expected Real Return	Standard Deviation [1]
Fixed Income	0.02%	0.03%	4.06%
Canadian Equity	4.30%	5.67%	14.67%
US Equity	3.98%	5.26%	14.21%
International Equity DV & EM	4.64%	6.11%	13.12%
Global Equity 20-40-40	4.31%	5.68%	12.71%
Global Equity 33-33-33	4.31%	5.68%	12.71%

Table 11: Expected Return Composition of the Global 33-33-33 equity portfolio [1].

Asset Class	Canadian Dividends	Interest + Foreign Dividends	Realized Capital Gain	Unrealized Capital Gain
Global Equity 33-33-33	0.80%	1.05%	2.36%	2.36%

4. Results

Before presenting the results, it is important to discuss the performance of the IPP-annuity strategy. The death age of the client was fixed at 95-years-old, but there is only a 20% chance that an average Canadian 65-year-old male will live to age 95, and a 30% chance that an average Canadian 65-year-old female will live to age 95 [7]. Since the life expectancy of an average 65-year-old Canadian is 18.8 years [8], or 19.8 years (male) and 22.13 years (female) if they are apart of a DB pension plan [9], there were approximately 8-11 years of mortality credits collected during the simulation when the annuity strategy was chosen.

Mortality credits are the extra benefits received by the annuitant for living past their life expectancy at the time the annuity was purchased. The annuity provider assumes that their entire pool of clients will live to the average life expectancy. In practice, some annuitants will die early, and some will live past their life expectancy.

The unrealized benefits from the annuitants that die early will fund the benefits of the annuitants that outlive their life expectancy. This behaviour is fundamental to annuity pricing.

In our simulations, since the annuity is purchased at age 65, the cost of the annuity would be based on living to the average life expectancy of 84 for a 65-year-old. Since we are holding the death age of 95 constant, there will always be 11 years mortality credits received. To determine whether an IPP is beneficial, an annuity would have to be purchased in the RRSP case for a direct comparison with the IPP-annuity strategy. To perform that analysis, it would be critical to have a variable death age, since one of the primary drawbacks of purchasing an annuity is the risk of dying early and not receiving the full benefit. Since the scope of this paper does not involve an annuity analysis, and this work already involves a wide range of variables, we are leaving the IPP-annuity analysis for future work. We will constrain our scope to investigate the performance of the 'Maintain IPP' and 'Commute IPP to RRSP' cases, as they can be directly compared to the RRSP case[16].

A similar note applies to all cases where salary is taken and CPP contributions are made. CPP is an annuity and will tend to make financial planning scenarios look better at long life expectancies and worse at shorter life expectancies. While it is worth keeping in mind, CPP is generally a small portion of overall income in our planning scenarios.

4.1 Single Objective Analysis

To illustrate the results, the three retirement ages of 45, 55, and 65 were considered for each of the six spending levels ranging from $6k/m to $16k/m in $2k intervals. The final after-tax net worth and sustainable spending rate for three compensation strategies (dividends, constant $175,833 salary, and dynamic salary) and five IPP/RRSP strategies were compared for 100% equity and 50% equity asset allocations.

4.1.1 100% Equity

4.1.1.i Final Net Worth

We compared the mean final net worth for $0 salary (dividends only), $175,833 (salary to max IPP/RRSP), and the dynamic salary strategy, for all five IPP/RRSP strategies. The dynamic salary strategy prioritized passing through dividends first, and then took the remaining salary required to fund consumption. Table 12 illustrates the optimal strategy for each retirement age and spending level. Table A2 presents the full final net worth results for each strategy at each retirement age and spending level.

[16] In unreported analysis, the IPP-annuity case did outperform the other strategies, as expected due to the consistent receival of mortality credits in our methodology.

Table 12: Optimal strategies for a given spending level and retirement age for an asset allocation of 100% equity.

	Retirement Age		
Monthly Spending	45	55	65
$6,000	IPP + Dynamic Salary	IPP + Dynamic Salary	IPP + Dynamic Salary
$8,000	IPP + Dynamic Salary	IPP + Dynamic Salary	IPP + Dynamic Salary
$10,000	IPP + Dynamic Salary	IPP + Dynamic Salary	IPP + Dynamic Salary
$12,000	IPP + $175k Salary	IPP + Dynamic Salary	IPP + Dynamic Salary
$14,000	IPP + Dynamic Salary	IPP + $175k Salary	IPP + Dynamic Salary
$16,000	-	IPP + $175k Salary	IPP + $175k Salary

Unanimously, the IPP generated the optimal outcome for a fixed spending level in terms of maximizing final net worth. Using an IPP with a dynamic salary generated the optimal outcome for low spending levels, while an IPP with the maximum salary generated the optimal outcome at high spending levels. This is because, for low spending levels, the CCPC builds up significant assets and more value is added by distributing dividends to minimize lost purchasing power due to the accumulation of notional account balances than is added by taking a salary to generate additional IPP contributions. At high spending levels, the assets inside the CCPC are smaller and the value add of distributing dividends to minimize notional account balances is lower than the value add of additional IPP contributions. The IPP unanimously improved performance compared to the dividend strategy and the max salary with RRSP strategy for all retirement ages and spending levels.

The success of the dynamic salary strategy at low spending levels demonstrates the impact of flexibility on compensation decisions, as illustrated by a sample dynamic salary compensation strategy in Figure 6. In this example, the dynamic salary case began by taking a large salary in the early years while there was minimal cash in the CCPC notional accounts. This built up the RRSP, as RRSP contributions were always maximized each year. After ~5 years, the corporate investment account became large enough to generate significant notional account assets, leading to a significant reduction in salary from this point forward. At age 38 in this example, compensation purely consisted of dividends. We see that over time the total pre-tax dividend needed to fund consumption decreased, capturing the build up of the corporate investment account (and thus yearly realized gains/dividends from the investments) allowing for the more tax efficient dividends (such as capital dividends and eligible dividends) to be prioritized. A sharp drop-off occurred at age 65 when CPP and OAS benefits kick in. After age 65, the investor could fund consumption purely from CPP/OAS and the tax-free CDA.

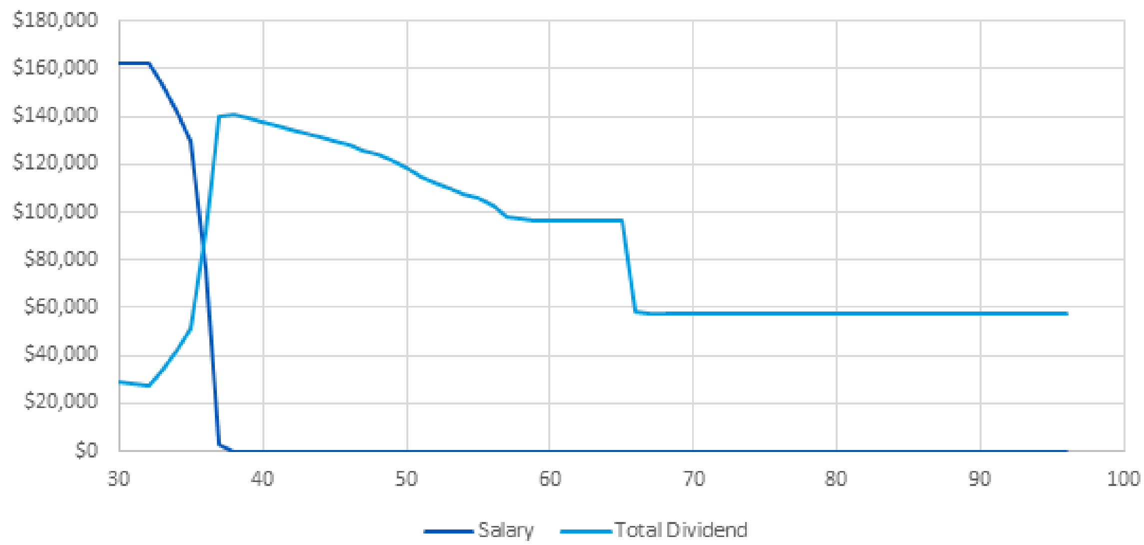

Figure 6: Example of the salary/dividend compensation for the dynamic salary strategy.

Further examining Tab. A2, it is important to note that the dividend cases generated nearly identical results for each of the IPP strategies because the IPP was set-up but then not used, as a salary is required to generate IPP contribution room. This would result in added IPP carrying costs for no benefit, resulting in the RRSP strategy being the most efficient of the dividend cases. In the dividend's scenario, the RRSP case is equivalent to retaining all earnings after consumption (and TFSA contribution) inside the corporation since there will be no RRSP room generated.

Comparing IPP strategies, the commute IPP to RRSP with terminal funding strategy generated the highest final net worth. The conversion of the IPP to the RRSP at age 65 outperformed maintaining the IPP on average in terms of final net worth, despite the tax liability due at age 65 from commuting the IPP. This seems counterintuitive at first, but the tax liability due at age 65 was relatively small on average, allowing for benefits of winding up the IPP overcome the tax liability. The most obvious benefit of winding up the IPP is the reduced carrying costs that occur from saving 30+ years of IPP administrative fees. A less obvious benefit of winding up the IPP is the added compensation flexibility comes from only having to distribute the RRIF minimum withdrawal instead of the full IPP benefit, thereby allowing more tax efficient dividends (and RDTOH tax refunds) to flow from the corporation to the individual to fund consumption. This would only occur in cases where there are substantial assets inside the corporation during retirement, which was the case for this analysis. These two factors outweighed the drawback of the tax liability at age 65 on average.

4.1.1.ii Sustainable Spending

When maximizing sustainable spending was the goal, the IPP unanimously outperformed the RRSP strategy for retirement ages of 45, 55, and 65. The full results are presented in Tab. A3. Taking a closer look, taking the commuted value of the IPP at retirement was again the optimal IPP strategy. Taking the maximum salary unanimously outperformed dividends and dynamic salary for all three retirement ages. This suggests that while the dynamic salary strategy may be of interest to individuals looking to maximize final net worth, individuals looking to maximize consumption would be better off taking the salary required to generate the maximum IPP contribution.

4.1.2 50% Equity

4.1.2.i Final Net Worth

For a 50% equity allocation, the IPP unanimously outperformed the RRSP strategy, with the dynamic salary strategy being optimal at low spending levels and the maximum constant salary being preferable at high spending levels. This provides further evidence suggesting that the value add of the dynamic salary strategy by reducing salary levels in later years when the CCPC has accumulated significant assets outweighs the value add of additional IPP contributions for low spending levels, with the reverse being true for high spending levels. Table 13 illustrates the optimal strategy for each retirement age and spending level. Table A4 presents the full final net worth results for each strategy.

Comparing the final net worth results for individuals with a high risk tolerance (Tab. A2) with the final net worth results for individuals with a moderate risk tolerance (Tab. A4), the average outperformance of the IPP increases from 9.58% for 100% equity to 44.34% for 50% equity. This highlights the advantages of the ITA's prescribed growth rate assumption for individuals with a low risk tolerance – increased IPP top-up contributions and reduced tax liability. Increased IPP top-up contributions will become available due to the decreased average performance of the IPP compared to the ITA's prescribed growth rate. For the same reason, the tax liability due to taking the commuted value of the IPP at retirement is significantly less on average for individuals with a low risk tolerance[17]. To be clear, an investor with a 100% equity allocation still generated a significant amount more average final net worth (~2.5x) than the investor with a 50% equity allocation, so reducing equity exposure purely to minimize the tax liability does not make sense when trying to maximize final net worth. But when holding risk tolerance constant and comparing strategies, the IPP becomes more attractive to a low risk investor due to the decreased likelihood that they will realize the prescribed growth rate used by the ITA thus increasing the available top-up contributions and decreasing their tax liability for commuting the IPP at retirement.

Table 13: Optimal strategies for a given spending level and retirement age for an asset allocation of 50% equity.

	Retirement Age		
Monthly Spending	45	55	65
$6,000	IPP + Dynamic Salary	IPP + Dynamic Salary	IPP + Dynamic Salary
$8,000	IPP + Dynamic Salary	IPP + Dynamic Salary	IPP + Dynamic Salary
$10,000	IPP + $175k Salary	IPP + Dynamic Salary	IPP + Dynamic Salary
$12,000	IPP + $175k Salary	IPP + $175k Salary	IPP + Dynamic Salary
$14,000	-	IPP + $175k Salary	IPP + $175k Salary
$16,000	-	IPP + $175k Salary	IPP + $175k Salary

Taking a deeper look at the outcomes of all the various IPP strategies in Tab. A4, taking the commuted value of the IPP with terminal funding was again the top performer. This observation further supports the notion that the drawback of the tax liability owed at age 65 when commuting the IPP to the RRSP is outweighed by the flexibility benefits of the RRSP and the elimination of IPP carrying costs. This is increasingly true for the 50% equity case because the tax liability was reduced due to the decrease in performance of the IPP with the lower expected return of the 50/50 portfolio.

4.1.2.ii Sustainable Spending

When maximizing sustainable spending was the goal, the IPP unanimously outperformed the RRSP strategy for retirement ages of 45, 55, and 65. The full results are presented in Tab. A5. Taking a closer look, taking the commuted value of the IPP at retirement was again optimal at all three retirement ages. The tax liability generated by taking the commuted value was worth it to generate the smaller benefit (RRIF minimums) and increased ability to fund consumption via dividends/notional account refunds. Taking the full salary required to generate the maximum IPP benefit generated the optimal outcome for all retirement ages for both the 50% and 100% equity portfolios, further indicating that the dynamic salary strategy should be avoided by individuals with a preference for maximizing consumption.

So far, we have assumed that in the salary case, dividends are only taken if required to fund consumption. In the case of $175,833 salary for example, if spending is low enough that it can be fully funded by the salary net of tax and CPP/TFSA/RRSP contributions, no additional dividend would be taken, even if there are assets in the capital dividend account that could be passed through the corporation tax-free to avoid losing purchasing power to inflation. To rule out that this was not over-inflating the benefits of the dynamic salary strategy, the analysis contained in Sec. 4.1 was repeated, this time depleting the CDA at the end of each year inside the simulation.

[17] Again, assuming all available top-up contributions are made, only the drag from the 3 years prior to retirement contributes to the decreased tax liability.

4.1.3 Distribute Yearly Capital Dividends

To determine if the benefits of the dynamic salary strategy could be captured by distributing yearly capital dividends, the analysis from Secs. 4.1.1 and 4.1.2 was repeated, but this time capital dividends were distributed from the corporation to the individual on a yearly basis to avoid lost purchasing power. If the capital dividend was not required to fund consumption, it was reinvested in a personal taxable account. To examine whether the dynamic salary strategy still made sense under these conditions, the final after-tax net worth results were compared with the results from Secs. 4.1.1 and 4.1.2.

For 100% equities, it was found that the dynamic salary strategy still adds value, increasing mean final net worth beyond what was observed in both the dividend and constant salary cases for all strategies except for the maintain IPP with terminal funding cases where dynamic salary underperformed dividends by only 0.02%. The average outperformance of the dynamic salary strategy was smaller when passing through yearly capital dividends, as expected, with average outperformance decreasing from 5.5% to 3.1%.

For 50% equities, the dynamic salary strategy underperformed the dividends strategy in terms of final after-tax net worth on average by 3.2% but was able to outperform the constant salary strategy by an average of 2.1%. For the commute IPP to RRSP with terminal funding strategy, the dynamic salary case outperformed both the dividend and constant salary cases by 1.4%.

Considering that the dynamic salary strategy was able to outperform the dividend and constant dollar strategies for a vast number of financial plans even when capital dividends were continuously distributed, we have demonstrated that the dynamic salary strategy is worth considering for clients with a focus on maximizing final after-tax net worth for multi-generational planning. For the remainder of the paper, we will concentrate our focus on the intuitive definition of the salary and dividend strategies without forcing the capital dividend distributions on a yearly basis, while understanding that real-world financial plans would distribute the capital dividends whenever the cost to do so outweighs the added accounting costs associated with preparing the CDA elections, and that the final net worth results presented in this paper would be incrementally higher by doing so.

4.2 Multi-Objective Analysis

So far, we have examined how the strategies perform when investigating a single objective in isolation, either maximizing final net worth or sustainable spending. This section aims to investigate both objectives simultaneously, as in reality, most individuals have some preference for maximizing both personal consumption and multi-generational wealth. For a closer look at the optimal outcomes, all solutions at their sustainable spending rate were plotted in terms of their final net worth. An efficient frontier of optimal solutions was generated by maximizing final net worth subject to a Monte Carlo success rate ≥90% over the range of spending values less than or equal to the maximum sustainable spending rate.

All solutions that lie along the efficient frontier are optimal for a given investor depending on their preference between consumption and final net worth. Cases that lie to the bottom left of the efficient frontier are sub-optimal. Considering this analysis focused on optimizing for two objectives, maximum sustainable spending rate and maximum final net worth, all optimal solutions had a retirement age of 65. It was beyond the scope of this work to factor in the added value of an early retirement into the optimization problem statement. As a result, the following charts show data for the 65-year-old retiree only. Figures 7 and 8 and illustrate the composition of the efficient frontier in terms of sustainable spending rate and final after-tax net worth for 100% and 50% equity asset allocations, respectively.

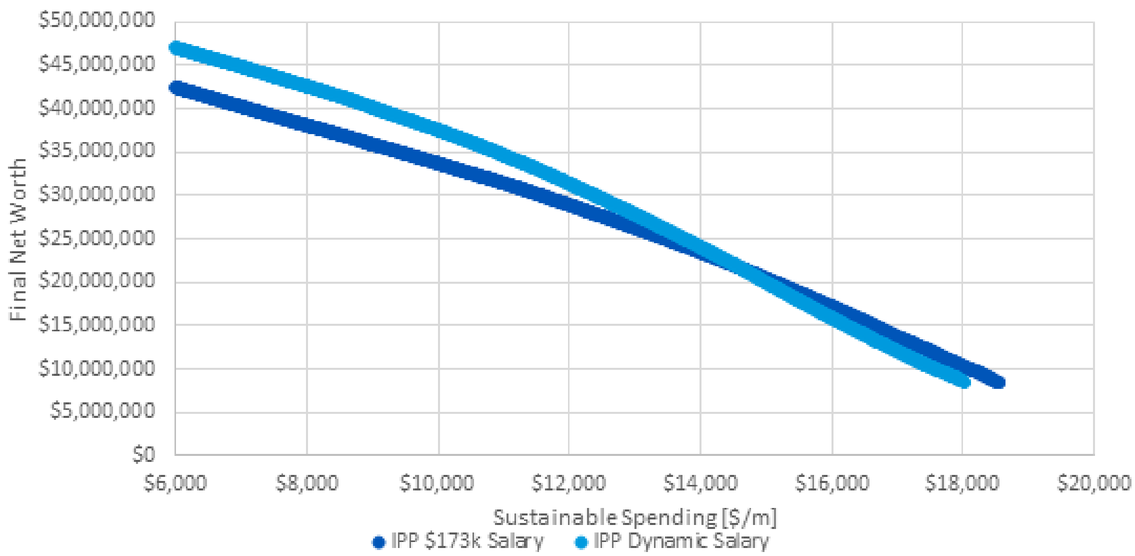

Figure 7: Composition of the efficient frontier for a 100% equity asset allocation.

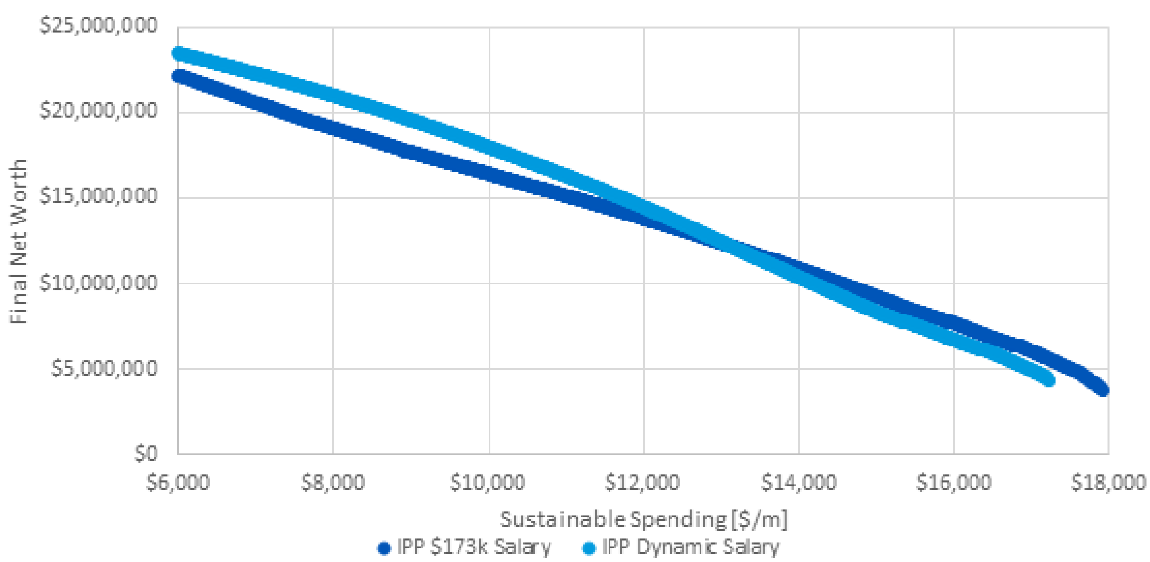

Figure 8: Composition of the efficient frontier for a 50% equity asset allocation.

There are two strategies that can be considered optimal depending on the individual's preference between maximizing multi-generational wealth and personal consumption. For individuals looking to maximize personal consumption, the IPP with $175,833 salary (maximizing IPP contributions) is the optimal choice. For individuals looking to maximize multi-generational wealth, the IPP with a dynamic salary is optimal.

There is a cross-over point that occurs at ~$14.5k and ~$13k monthly spending rate for 100% and 50% equity allocations respectively where the optimal strategy shifts from the dynamic salary strategy to taking the full $175,833 salary to generate maximum IPP contributions. The 100% equity allocation generates substantially higher final net worth values and sustainable spending rates than the 50% equity allocation, as expected.

Further investigating the performance of the strategies within each equity allocation, the relative outperformance of the IPP strategy is higher for the 50% equity allocation than the 100% equity allocation. This is illustrated in Figs. 9 and 10 where the dividends and maximum salary with the RRSP strategies are compared with the efficient frontier that is composed of the optimal IPP strategies illustrated in Figs. 7 and 8. For 100% equity allocation, the RRSP salary case remains within 10% of the IPP in terms of final net worth for all sustainable spending rates, while with 50% equity the IPP outperforms the RRSP by more than 20% in terms of final net worth in some cases. The reason that the IPP is more favourable at lower equity allocations is due to the ITA's prescribed growth rate. There are two primary mechanisms responsible for this effect, the first being increased IPP contributions on average with lower equity exposure, as the IPP is less likely to reach the prescribed growth rate. The second mechanism is the maximum RRSP transfer amount, which is less likely to be exceeded with a lower equity exposure. This means that there will be less of a tax impact for taking the commuted value of the IPP at age 65. Holding returns constant and combining this with the extra IPP contributions leads to a significantly larger IPP than the equivalent RRSP, meaning increased tax-sheltered growth. For spending levels $14.7k/m - $18.56k/m for 100% equity and $13.15k/m - $17.93k/m for 50% equity, the net worth when taking the commuted value of the IPP at age 65 with $175,833 of salary was higher than that of all other strategies. Since we know that the Monte Carlo success rate is >90% for these cases, the 'average' outcome must be quite favourable. We see that with the final net worth values, all >$8M for 100% equity and >$3.8M for 50% equity. Therefore, all these cases on average will have significant funds remaining inside the corporation for a large part of retirement. We saw in Sec. 2.1.3 the impact of not depleting notional account values on a yearly basis. When the IPP is maintained during retirement, the IPP benefit must be paid. However, when the IPP is dissolved and the commuted value is transferred to an RRSP, only the RRIF minimums must be withdrawn – often significantly less than the IPP benefit.

This provides substantial flexibility to fund consumption more efficiently, particularly if there are large notional account values. Since our expected return model assumes that 50% of the capital gain is realized each year (in the case of straight-line returns), a significant amount of CDA room will be available on a yearly basis if the corporate investment account is >$1M. This is true of RDTOH and GRIP as well, leading to a significant corporate dividend required to ensure the lost purchasing power effect from Sec. 2.1.3 does not occur. From these results, we see that the added flexibility of RRIF payments vs IPP benefits outweighs the negative impact of the tax liability owed when the commuted value of the IPP is taken.

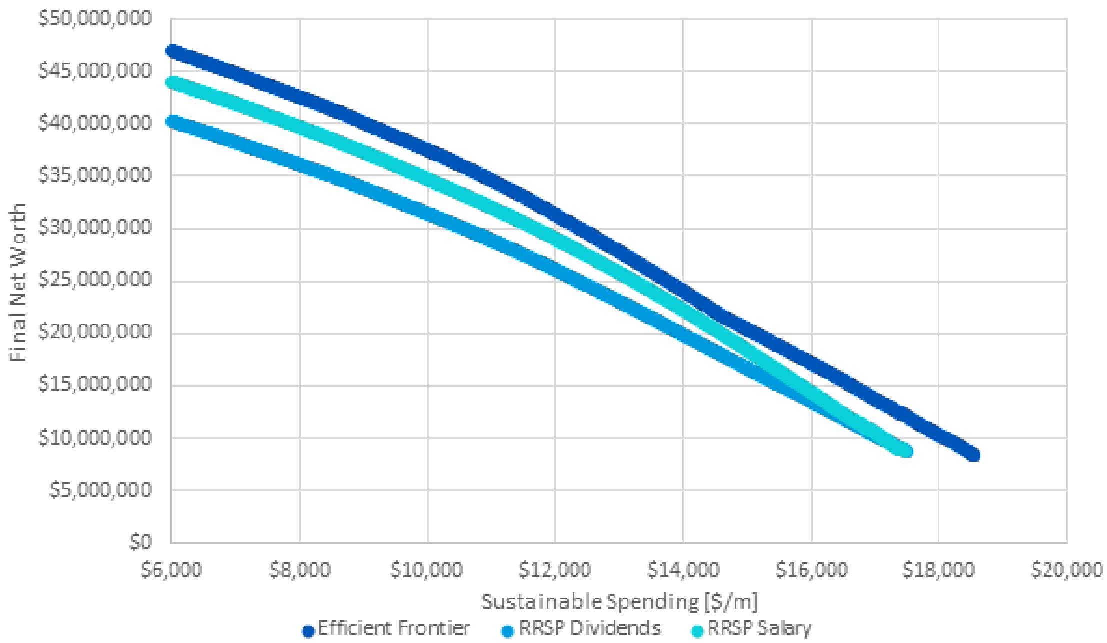

Figure 9: Comparison of dividends and maximum salary with RRSP with the efficient frontier composed of the optimal IPP strategy for 100% equity.

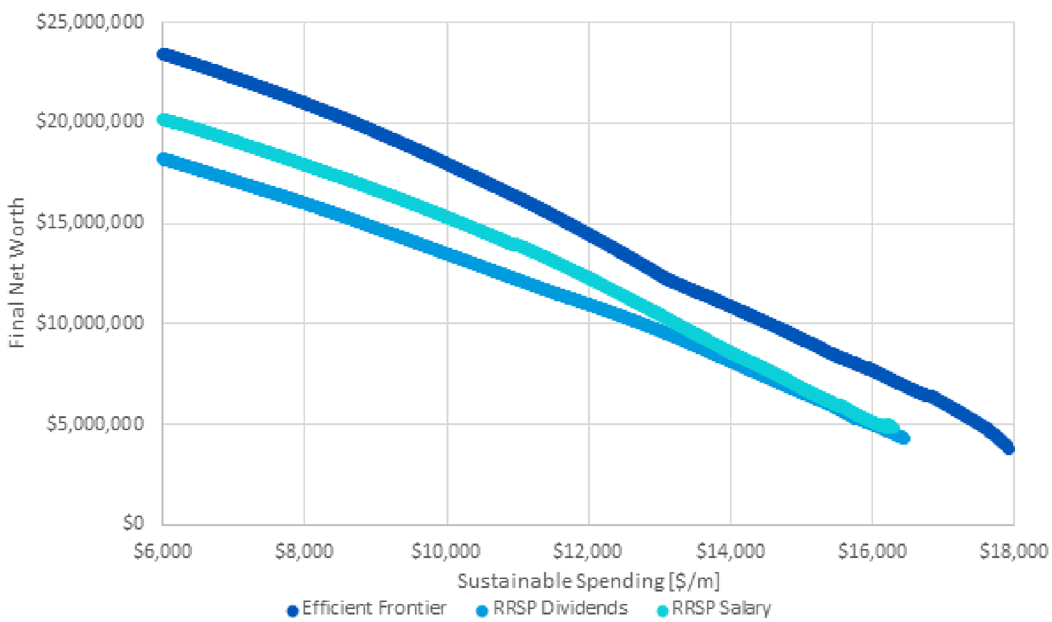

Figure 10: Comparison of dividends and maximum salary with RRSP with the efficient frontier composed of the optimal IPP strategy for 50% equity.

For spending levels <\$14.7k/m for 100% equity and <\$13.15k/m for 50% equity, this effect was even more pronounced, leading to the dynamic salary strategy to produce a higher final net worth for a given level of spending. We saw in Fig. 5 that the dynamic salary strategy allows for a larger salary in the early years when notional account balances are small, and a reduction in salary in later years to allow for the notional accounts to be emptied on a yearly basis. For low levels of spending, a larger percentage of spending is funded by the salary – meaning that less dividends are required to fund consumption in working years and a larger possibility of lost purchasing power if the notional account balances are not emptied year over year. The dynamic salary strategy has a bigger impact on cases with lower spending levels for this reason. The dynamic salary strategy is the best of both worlds in this case, it allows for the higher salary to be taken to build up the IPP/RRSP when dividends are not required, and it pulls back the salary to lower levels when dividends are required to prevent lost purchasing power. In the long run, this will reduce the IPP benefit/RRIF minimum withdrawals, giving further flexibility in retirement to fund consumption through the most efficient vehicle. As in working years, lower spending levels benefit the most from this added flexibility because a larger portion of consumption will be funded through CPP/OAS/RRIF/IPP. Therefore, we see that taking the commuted value of the IPP with a dynamic salary generates the optimal outcome at low levels of spending for both 100% and 50% equity. Due to the decreased value of the IPP when using the dynamic salary strategy, the tax liability owed at age 65 becomes even less of a concern.

The takeaways from this analysis are for an individual with a retirement age of 65 that prioritizes consumption, setting up an IPP and taking the salary required to make maximum IPP contributions is the optimal scenario. For an individual that wishes to spend well below their sustainable spending rate, the dynamic salary strategy (with IPP for individuals with a strong preference for maximizing final net worth, and with an RRSP for individuals with a preference for maximizing both objectives) is optimal to allow for the notional account balances, and thus lost purchasing power, to be minimized. For an individual that prioritizes both personal consumption and multi-generational wealth, the results of this work show that a detailed financial planning model that considers all variables must be used to evaluate whether or not an IPP with dynamic salary or an RRSP with dynamic salary is the optimal outcome.

5 Conclusion

We have analyzed a wide range of financial planning outcomes with varying retirement age, salary, spending, asset allocation, and IPP/RRSP strategies, considering two objectives: maximizing sustainable spending and final after-tax net worth. It was deemed that an IPP with maximum salary was optimal for individuals looking to maximize personal consumption, and an IPP with a systematically varying (dynamic) salary was optimal for individuals with a preference towards maximizing multi-generational wealth. Compensation in the form of only dividends was the consistent laggard and is not beneficial unless setting up an IPP was out of the question. The IPP was able to outperform the RRSP in terms of both sustainable spending and final net worth. The dynamic salary strategy generated a higher mean after-tax final net worth than both the maximum salary and dividends strategies for both asset allocations considered. Both the IPP and the dynamic salary strategy have been demonstrated to be valuable tools in a financial planners toolbelt.

When performing a multi-objective optimization simultaneously considering sustainable spending and final after-tax net worth, we were able to determine that the efficient frontier was composed of two different IPP strategies – one with maximum salary at high consumption levels and one with dynamic salary at low consumption levels. This agreed with the single objective analysis but allowed us to quantify the level of consumption required for the maximum salary to become optimal. The IPP was of increased benefit for individuals with low risk tolerance, as their investment returns were likely to underperform the ITA's prescribed growth rate allowing for additional IPP contributions and additional tax deferred growth. It remains to be seen whether these results could be improved by implementing an IPP strategy that opportunistically takes the commuted value when the tax liability is below a pre-determined threshold and maintains the IPP into retirement otherwise. We will leave this for future work.

From the results found herein, it is safe to say that a combination of salary and dividends is likely to deliver optimal outcomes in many cases. The dynamic salary strategy, which consisted of a compensation package that shifted in preference of salary vs dividends year-over-year to allow for notional account balances to be minimized, generated the optimal financial planning outcome for individuals with a preference for simultaneously maximizing both personal consumption and multi-generational wealth.

Additionally, it was demonstrated that taking a capital dividend as soon as it became available increased the mean final net worth values for all strategies by an average of 5.5% for 100% equities and 10.2% for 50% equities. At the very least, a combination of salary and capital dividends would be preferrable to a salary-only compensation package. Based on these results, we discourage financial planners from thinking about salary vs dividends in a black-and-white context, but rather to explore the grey area likely to contain the optimal solution for most individuals.

It is important to note that this study was limited to Ontario residents only and may not extrapolate to other provinces due to Ontario's refusal to adopt the general corporate tax rate for corporations with active income less than the small business reduction threshold. New Brunswick is the only other province that has a similar corporate tax structure to Ontario, leading to similar expected results. For all other provinces, active income above the small business reduction threshold is taxed at the full corporate rate, meaning that it would be even less advantageous to allow funds to accumulate inside the corporation than the results herein. For future work, it would be interesting to explore the results for other provinces, along with new strategies such as emptying notional accounts to invest in a personal taxable account to take immediate advantage of the tax refund and to prevent the build up of corporate assets.

Finally, it is important to mention that despite investigating over 7 million financial planning outcomes, this work was limited to a single case study. These results may not extrapolate to other scenarios for individuals of different ages, with different levels of corporate revenue, or different amount of past-service funding for an IPP, etc. All of these (and other) variables were held fixed for all financial planning outcomes studied and may have an influence on the results presented herein. To determine the optimal financial planning outcomes for an individual or household all variables must accurately reflect their unique scenario, and generic results should not be extrapolated out of context.

6 Acknowledgements

We would like to acknowledge the insightful contributions from Jason Pereira from Woodgate Financial Inc., Steve O'Grady and Spenser McCaig from Westcoast Actuaries, and Jacob Milosek and Spencer Brooks from Hendry Warren LLP. This work would not have been possible without their contributions. We would like to acknowledge the insightful contributions from Jason Pereira from Woodgate Financial Inc., Steve O'Grady and Spenser McCaig from Westcoast Actuaries, Jacob Milosek and Spencer Brooks from Hendry Warren LLP, and Dr. Mark Soth. This work would not have been possible without their contributions. We accept all errors as our own.

7 Appendix

Table A1: Calculation of IPP contribution room for an individual earning $200,000/yr at ages 35-65. Note that this calculation is for illustrative purposes only, please consult with a licenced actuary to determine your individual contribution room.

Age	Salary At 65, S_{65}	DB Limit At 65, DBL_{65}	Added IPP Benefit, IPP_{Bi}	Added Annuity Cost, IPP_{Ci}	PV of Annuity/ IPP Contribution, PVA_i	RRSP Contribution
35	$996,790.26	$17,477.07	$17,477.07	$253,982.06	$29,010.39	$30,780.00
36	$944,824.89	$16,565.95	$16,565.95	$240,741.29	$29,560.34	$30,780.00
37	$895,568.61	$15,702.32	$15,702.32	$228,190.80	$30,120.71	$30,780.00
38	$848,880.20	$14,883.71	$14,883.71	$216,294.59	$30,691.71	$30,780.00
39	$804,625.79	$14,107.79	$14,107.79	$205,018.57	$31,273.53	$30,780.00
40	$762,678.47	$13,372.31	$13,372.31	$194,330.40	$31,866.39	$30,780.00
41	$722,917.98	$12,675.17	$12,675.17	$184,199.43	$32,470.48	$30,780.00
42	$685,230.31	$12,014.38	$12,014.38	$174,596.62	$33,086.02	$30,780.00
43	$649,507.41	$11,388.04	$11,388.04	$165,494.42	$33,713.23	$30,780.00
44	$615,646.83	$10,794.35	$10,794.35	$156,866.75	$34,352.33	$30,780.00
45	$583,551.50	$10,231.61	$10,231.61	$148,688.86	$35,003.55	$30,780.00
46	$553,129.38	$9,698.21	$9,698.21	$140,937.31	$35,667.11	$30,780.00
47	$524,293.25	$9,192.62	$9,192.62	$133,589.87	$36,343.26	$30,780.00
48	$496,960.43	$8,713.38	$8,713.38	$126,625.47	$37,032.21	$30,780.00
49	$471,052.54	$8,259.13	$8,259.13	$120,024.14	$37,734.23	$30,780.00
50	$446,495.30	$7,828.56	$7,828.56	$113,766.96	$38,449.56	$30,780.00
51	$423,218.29	$7,420.43	$7,420.43	$107,835.98	$39,178.45	$30,780.00
52	$401,154.78	$7,033.59	$7,033.59	$102,214.20	$39,921.16	$30,780.00
53	$380,241.50	$6,666.91	$6,666.91	$96,885.50	$40,677.94	$30,780.00
54	$360,418.48	$6,319.34	$6,319.34	$91,834.59	$41,449.07	$30,780.00
55	$341,628.89	$5,989.90	$5,989.90	$87,047.01	$42,234.82	$30,780.00
56	$323,818.85	$5,677.63	$5,677.63	$82,509.01	$43,035.47	$30,780.00
57	$306,937.30	$5,381.64	$5,381.64	$78,207.59	$43,851.29	$30,780.00
58	$290,935.83	$5,101.08	$5,101.08	$74,130.42	$44,682.58	$30,780.00
59	$275,768.56	$4,835.15	$4,835.15	$70,265.80	$45,529.63	$30,780.00
60	$261,392.00	$4,583.08	$4,583.08	$66,602.66	$46,392.73	$30,780.00
61	$247,764.93	$4,344.15	$4,344.15	$63,130.48	$47,272.20	$30,780.00
62	$234,848.28	$4,117.68	$4,117.68	$59,839.32	$48,168.34	$30,780.00
63	$222,605.00	$3,903.01	$3,903.01	$56,719.73	$49,081.47	$30,780.00
64	$211,000.00	$3,699.54	$3,699.54	$53,762.78	$50,011.90	$30,780.00
65	$200,000.00	$3,506.67	$3,506.67	$50,959.98	$50,959.98	$30,780.00

Table A2: Final after-tax net worth (real dollars) for the RRSP and each IPP strategy compensating with dividends, constant ($175k) salary, and dynamic salary for 45-, 55-, and 65-year-old retirees with a 100% equity portfolio.

		45-Year-Old Retiree			55-Year-Old Retiree			65-Year-Old Retiree		
		$0k Salary	$175k Salary	Dynamic	$0k Salary	$175k Salary	Dynamic	$0k Salary	$175k Salary	Dynamic
$6000/m Spending	RRSP	$21,245,268	$21,403,779	$22,988,952	$32,301,361	$31,912,969	$34,953,167	$40,173,739	$39,515,041	$43,423,531
	Maintain IPP w Terminal Funding	$21,098,226	$21,858,889	$23,441,887	$32,176,458	$32,874,155	$36,386,872	$40,059,519	$40,732,791	$44,974,643
	Maintain IPP w/o Terminal Funding	$21,098,226	$21,370,466	$23,271,824	$32,176,458	$31,730,593	$35,360,553	$40,059,519	$39,069,515	$43,865,076
	IPP -> RRSP w Terminal Funding	$21,152,304	$22,125,435	$24,080,270	$32,230,537	$33,739,912	$37,154,431	$40,113,600	$42,314,110	$46,345,012
	IPP -> RRSP w/o Terminal Funding	$21,152,304	$21,221,866	$23,287,375	$32,230,537	$31,645,299	$35,337,390	$40,113,600	$39,217,227	$43,905,607
$8000/m Spending	RRSP	$17,290,231	$17,725,134	$18,895,572	$28,173,514	$27,460,078	$30,691,127	$36,035,115	$35,068,160	$39,139,521
	Maintain IPP w Terminal Funding	$17,143,697	$17,776,070	$19,156,916	$28,048,300	$28,508,356	$31,979,951	$35,923,617	$36,472,436	$40,536,528
	Maintain IPP w/o Terminal Funding	$17,143,697	$17,520,191	$18,938,146	$28,048,300	$27,317,870	$30,880,140	$35,923,617	$34,795,341	$39,326,021
	IPP -> RRSP w Terminal Funding	$17,197,755	$18,420,895	$19,790,287	$28,102,378	$29,314,196	$32,770,640	$35,977,697	$37,950,971	$41,933,818
	IPP -> RRSP w/o Terminal Funding	$17,197,755	$17,483,682	$18,927,095	$28,102,378	$27,203,707	$30,886,836	$35,977,697	$34,804,001	$39,401,929
$10000/m Spending	RRSP	$12,718,577	$13,759,978	$14,044,406	$23,548,820	$23,735,181	$25,768,556	$31,350,454	$30,863,292	$34,196,892
	Maintain IPP w Terminal Funding	$12,578,400	$13,308,458	$13,612,011	$23,421,365	$23,634,971	$26,058,239	$31,237,620	$32,065,593	$34,373,175
	Maintain IPP w/o Terminal Funding	$12,578,400	$13,372,496	$13,670,982	$23,421,365	$23,214,272	$25,676,955	$31,237,620	$30,257,514	$34,045,308
	IPP -> RRSP w Terminal Funding	$12,631,978	$14,485,514	$14,750,001	$23,475,425	$25,319,816	$27,693,802	$31,291,697	$33,565,515	$36,882,992
	IPP -> RRSP w/o Terminal Funding	$12,631,978	$13,483,500	$13,785,753	$23,475,425	$23,181,112	$25,652,997	$31,291,697	$30,354,786	$34,175,064
$12000/m Spending	RRSP	$8,730,750	$9,436,307	$9,228,818	$18,206,151	$19,082,369	$20,111,111	$26,026,460	$26,041,625	$28,513,152
	Maintain IPP w Terminal Funding	$8,665,363	$9,187,957	$8,543,626	$18,079,694	$19,013,164	$19,865,389	$25,907,206	$27,284,271	$28,160,555
	Maintain IPP w/o Terminal Funding	$8,665,363	$9,287,380	$8,623,088	$18,079,694	$18,535,819	$19,411,662	$25,907,206	$25,327,374	$27,736,737
	IPP -> RRSP w Terminal Funding	$8,711,801	$10,471,480	$9,839,925	$18,133,601	$20,765,689	$21,618,420	$25,961,270	$28,787,686	$30,775,233
	IPP -> RRSP w/o Terminal Funding	$8,711,801	$9,432,204	$8,797,568	$18,133,601	$18,629,585	$19,503,237	$25,961,270	$25,533,023	$27,977,777
$14000/m Spending	RRSP	$4,210,127	$4,396,688	$4,582,393	$12,488,607	$13,466,036	$13,445,115	$19,820,740	$20,419,842	$21,713,868
	Maintain IPP w Terminal Funding	$4,194,838	$4,714,613	$4,443,520	$12,359,535	$12,632,958	$11,761,741	$19,697,412	$21,770,196	$19,324,423
	Maintain IPP w/o Terminal Funding	$4,194,838	$4,137,798	$3,797,727	$12,359,535	$13,166,832	$12,307,783	$19,697,412	$19,766,685	$20,233,612
	IPP -> RRSP w Terminal Funding	$4,194,838	$5,846,878	$5,862,135	$12,407,732	$15,482,760	$14,637,390	$19,751,088	$23,369,873	$23,458,260
	IPP -> RRSP w/o Terminal Funding	$4,194,838	$4,651,772	$4,493,243	$12,407,732	$13,274,141	$12,443,176	$19,751,088	$20,111,998	$20,573,262
$16000/m Spending	RRSP	$0	$0	$0	$7,560,642	$7,466,304	$7,052,394	$13,475,493	$13,899,347	$13,877,381
	Maintain IPP w Terminal Funding	$0	$0	$0	$7,478,866	$6,518,334	$5,166,598	$13,331,135	$15,413,969	$10,909,512
	Maintain IPP w/o Terminal Funding	$0	$0	$0	$7,478,866	$7,271,454	$6,071,006	$13,331,135	$13,361,299	$11,827,420
	IPP -> RRSP w Terminal Funding	$0	$0	$0	$7,485,673	$9,607,705	$8,448,317	$13,379,739	$17,120,418	$15,297,316
	IPP -> RRSP w/o Terminal Funding	$0	$0	$0	$7,485,673	$7,393,540	$6,256,431	$13,379,739	$13,760,607	$12,258,832

Table A3: Sustainable spending rate ($/m) for the RRSP and each IPP strategy compensating with dividends, constant ($175k) salary, and dynamic salary for 45-, 55-, and 65-year-old retirees with a 100% equity portfolio.

	45-Year-Old Retiree			55-Year-Old Retiree			65-Year-Old Retiree		
	$0k Salary	$175k Salary	Dynamic	$0k Salary	$175k Salary	Dynamic	$0k Salary	$175k Salary	Dynamic
RRSP	$11,160	$11,150	$11,040	$14,940	$14,940	$14,780	$17,500	$17,460	$17,270
Maintain IPP w Terminal Funding	$11,150	$11,590	$11,440	$14,910	$15,350	$14,890	$17,470	$16,840	$15,650
Maintain IPP w/o Terminal Funding	$11,150	$11,310	$11,240	$14,910	$15,060	$14,680	$17,470	$17,530	$16,920
IPP -> RRSP w Terminal Funding	$11,150	$12,120	$11,880	$14,910	$16,160	$15,700	$17,470	$18,560	$18,020
IPP -> RRSP w/o Terminal Funding	$11,150	$11,280	$11,230	$14,910	$15,040	$14,630	$17,470	$17,440	$16,900

Table A4: Final after-tax net worth (real dollars) for the RRSP and each IPP strategy compensating with dividends, constant ($175k) salary, and dynamic salary for 45-, 55-, and 65-year-old retirees with a 50% equity portfolio.

		45-Year-Old Retiree			55-Year-Old Retiree			65-Year-Old Retiree		
		$0k Salary	$175k Salary	Dynamic	$0k Salary	$175k Salary	Dynamic	$0k Salary	$175k Salary	Dynamic
$6000/m Spending	RRSP	$8,046,920	$8,906,412	$8,933,493	$13,555,591	$14,474,707	$14,974,637	$18,151,195	$19,133,151	$19,901,765
	Maintain IPP w Terminal Funding	$7,957,341	$9,644,679	$9,559,717	$13,478,775	$15,868,034	$16,786,273	$18,083,860	$20,713,542	$21,800,979
	Maintain IPP w/o Terminal Funding	$7,957,341	$8,692,028	$9,038,257	$13,478,775	$14,600,591	$15,436,940	$18,083,860	$19,288,393	$20,534,680
	IPP -> RRSP w Terminal Funding	$7,998,286	$10,394,986	$10,787,767	$13,519,750	$16,828,702	$17,824,370	$18,124,838	$22,136,171	$23,107,893
	IPP -> RRSP w/o Terminal Funding	$7,998,286	$8,892,833	$9,239,771	$13,519,750	$14,589,839	$15,668,333	$18,124,838	$19,271,632	$20,725,668
$8000/m Spending	RRSP	$6,229,525	$6,389,477	$6,688,729	$11,376,737	$11,651,920	$12,729,365	$15,930,767	$16,010,738	$17,643,832
	Maintain IPP w Terminal Funding	$6,146,760	$6,655,920	$7,032,328	$11,298,319	$12,941,425	$14,242,543	$15,863,357	$17,607,178	$19,248,728
	Maintain IPP w/o Terminal Funding	$6,146,760	$6,084,728	$6,484,132	$11,298,319	$11,488,897	$12,776,243	$15,863,357	$16,048,029	$17,890,097
	IPP -> RRSP w Terminal Funding	$6,185,454	$7,979,408	$8,330,275	$11,339,252	$14,024,740	$15,357,302	$15,904,325	$19,027,929	$20,654,353
	IPP -> RRSP w/o Terminal Funding	$6,185,454	$6,473,391	$6,771,702	$11,339,252	$11,787,992	$13,120,814	$15,904,325	$16,230,225	$18,174,463
$10000/m Spending	RRSP	$4,555,410	$4,686,333	$4,688,405	$9,129,355	$9,540,465	$10,120,724	$13,434,423	$13,658,471	$15,049,705
	Maintain IPP w Terminal Funding	$4,514,672	$4,057,026	$4,007,759	$9,046,888	$9,649,648	$10,390,116	$13,359,617	$14,852,535	$15,284,578
	Maintain IPP w/o Terminal Funding	$4,514,672	$4,402,439	$4,360,866	$9,046,888	$8,954,819	$9,710,535	$13,359,617	$13,155,663	$14,713,829
	IPP -> RRSP w Terminal Funding	$4,545,320	$5,966,773	$5,921,665	$9,085,380	$11,681,888	$12,417,838	$13,400,361	$16,358,835	$17,647,019
	IPP -> RRSP w/o Terminal Funding	$4,545,320	$4,559,420	$4,521,149	$9,085,380	$9,403,323	$10,155,193	$13,400,361	$13,513,128	$15,154,125
$12000/m Spending	RRSP	$2,189,084	$2,253,408	$2,136,017	$6,854,750	$7,006,738	$7,144,433	$10,914,208	$11,158,488	$12,026,090
	Maintain IPP w Terminal Funding	$2,180,878	$2,833,505	$2,592,229	$6,773,720	$6,210,342	$6,033,550	$10,832,221	$12,209,554	$11,719,017
	Maintain IPP w/o Terminal Funding	$2,180,878	$2,185,636	$1,900,149	$6,773,720	$6,662,642	$6,527,760	$10,832,221	$10,480,955	$11,151,114
	IPP -> RRSP w Terminal Funding	$2,180,878	$3,665,075	$3,396,753	$6,813,000	$9,218,844	$9,054,951	$10,870,791	$13,760,238	$14,164,117
	IPP -> RRSP w/o Terminal Funding	$2,180,878	$2,285,186	$2,045,768	$6,813,000	$6,971,425	$6,809,809	$10,870,791	$11,052,305	$11,699,576
$14000/m Spending	RRSP	$0	$0	$0	$4,503,701	$4,469,695	$4,311,495	$8,109,148	$8,107,876	$8,350,568
	Maintain IPP w Terminal Funding	$0	$0	$0	$4,443,832	$3,478,259	$2,802,272	$8,023,388	$9,181,089	$6,517,226
	Maintain IPP w/o Terminal Funding	$0	$0	$0	$4,443,832	$4,356,210	$3,645,820	$8,023,388	$7,802,335	$7,412,957
	IPP -> RRSP w Terminal Funding	$0	$0	$0	$4,443,832	$6,527,157	$5,790,604	$8,061,068	$10,836,971	$10,095,126
	IPP -> RRSP w/o Terminal Funding	$0	$0	$0	$4,443,832	$4,428,939	$3,807,189	$8,061,068	$8,090,710	$7,589,470
$16000/m Spending	RRSP	$0	$0	$0	$307,957	$1,039,892	$948,171	$4,956,559	$5,030,678	$4,892,125
	Maintain IPP w Terminal Funding	$0	$0	$0	$315,131	$2,087,069	$1,040,463	$4,900,795	$5,756,736	$2,864,361
	Maintain IPP w/o Terminal Funding	$0	$0	$0	$315,131	$207,836	$0	$4,900,795	$4,863,840	$3,913,455
	IPP -> RRSP w Terminal Funding	$0	$0	$0	$315,131	$3,700,286	$3,504,876	$4,915,540	$7,675,061	$6,436,187
	IPP -> RRSP w/o Terminal Funding	$0	$0	$0	$315,131	$1,374,247	$369,664	$4,915,540	$5,003,134	$4,193,324

Table A5: Sustainable spending rate ($/m) for the RRSP and each IPP strategy compensating with dividends, constant ($175k) salary, and dynamic salary for 45-, 55-, and 65-year-old retirees with a 50% equity portfolio.

	45-Year-Old Retiree			55-Year-Old Retiree			65-Year-Old Retiree		
	$0k Salary	$175k Salary	Dynamic	$0k Salary	$175k Salary	Dynamic	$0k Salary	$175k Salary	Dynamic
RRSP	$11,160	$11,150	$11,040	$14,940	$14,940	$14,780	$17,500	$17,460	$17,270
Maintain IPP w Terminal Funding	$11,150	$11,590	$11,440	$14,910	$15,350	$14,890	$17,470	$16,840	$15,650
Maintain IPP w/o Terminal Funding	$11,150	$11,310	$11,240	$14,910	$15,060	$14,680	$17,470	$17,530	$16,920
IPP -> RRSP w Terminal Funding	$11,150	$12,120	$11,880	$14,910	$16,160	$15,700	$17,470	$18,560	$18,020
IPP -> RRSP w/o Terminal Funding	$11,150	$11,280	$11,230	$14,910	$15,040	$14,630	$17,470	$17,440	$16,900

References

[1] B. Felix, "A Taxing Decision," PWL Capital Inc., Ottawa, ON, 2015.

[2] Canada Revenue Agency, "Income Tax Regulations, 8300(1)".

[3] Canada Revenue Agency, "MP, DB, RRSP, DPSP, ALDA, TFSA limits and the YMPE," [Online]. Available: https://www.canada.ca/en/revenue-agency/services/tax/registered-plans-administrators/pspa/mp-rrsp-dpsp-tfsa-limits-ympe.html.

[4] J. Tarasoff, "The Impact of CPI and Wage Inflation on the CPP Deferral Decision," PWL Internal Research, 2022.

[5] B. Felix and R. Kerzerho, "Financial Planning Assumptions," PWL Capital, 2022.

[6] E. Dimson, P. Marsh and M. Staunton, "Credit Suisse Global Investment Returns Yearbook 2013," Credit Suisse Research Institute, Zurich, 2013.

[7] FP Canada, "Projection Assumption Guidelines," 30 April 2022. [Online]. Available: https://fpcanada.ca/docs/default-source/standards/2022-pag---english.pdf.

[8] Statistics Canada, "Table 12-10-0134-01 Life expectancy at various ages, by population group and sex, Canada," 2020. [Online]. Available: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310013401.

[9] Canadian Institute of Actuaries, "Canadian Pensioners' Mortality," February 2014. [Online]. Available: https://www.cia-ica.ca/docs/default-source/2014/214013e.pdf.

www.pwlcapital.com

Ottawa
265 Carling Avenue, 8th Floor, Ottawa, Ontario K1S 2E1
T 613.237.5544 | 1-800.230.5544 | F 613.237.5949
ottawa@pwlcapital.com | www.pwlcapital.com/ottawa

Montreal
3400 de Maisonneuve O. Suite 1501, Montreal, Quebec H3Z 3B8
T 514.875.7566 | 1-800.875.7566 | F 514.875.9611
montreal@pwlcapital.com | www.pwlcapital.com/montreal

Portfolio management and brokerage services are offered by **PWL Capital Inc.**, regulated by Canadian Investment Regulatory Organization (CIRO) and is a member of the Canadian Investor Protection Fund (CIPF).

Financial planning and insurance products are offered by **PWL Advisors Inc.**, regulated in Ontario by Financial Services Commission of Ontario (FSCO) and in Quebec by the *Autorité des marchés financiers* (AMF). **PWL Advisors Inc.** is not a member of CIPF.