

Projection Assumption Guidelines

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1. BACKGROUND

An important facet of the financial planner's work is to make a variety of projections (retirement needs and retirement income, insurance needs, children's education funding needs, etc.). In making projections, financial planners are bound by method, rather than results. The purpose of this document is to map out the assumptions to use in the preparation of these projections.

The Guidelines are intended as a guide and are appropriate for making long-term (10+ years) financial projections that are free from the potential biases of financial planners. Predicting the direction the economy will take and how financial markets will evolve is a difficult exercise requiring the integration of a large number of variables and highly sophisticated valuation models. To protect themselves and their clients, financial planners are encouraged to rely on these Guidelines.

Financial planners should also develop sensitivity analyses to illustrate and assess the impact of changes in assumptions on clients' financial positions and to facilitate decision making by clients in their best interests.

a) Updating and useful life of the Guidelines

The Guidelines are updated annually. Although some of the assumptions set out in these Guidelines may change from time to time, this does not mean that projections based on previously published assumptions are no longer valid. In fact, projections are considered valid at the time of preparation.

b) Use of the Guidelines

The use of the Guidelines is strongly encouraged to promote trust and confidence in your projections given their objectivity and basis in reliable sources.

That said, as a financial planner, you are in the best position to understand your clients' unique circumstances. As well, because every client situation is different, assumptions that vary from the Guidelines may be used. As an example, short term projections may incorporate actual rates of return on fixed term investments held to maturity. As well, projections of education costs, which tend to be impacted by local market differences may justify using an inflation rate that differs from the Guidelines.

c) Compliance with the Guidelines

In all cases, assumptions used should be documented, with sound rationale, and clearly communicated to your clients. The use of the Guidelines can be disclosed using a statement such as the following:

- Projection prepared using the IQPF and FPSC Projection Assumption Guidelines.
- Analysis prepared using the IQPF and FPSC Projection Assumption Guidelines.
- Study prepared using the IQPF and FPSC Projection Assumption Guidelines.
- Calculation made using the IQPF and FPSC Projection Assumption Guidelines

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d) Deviation Margins

Where appropriate, financial planners may deviate within plus or minus .5% from the rate of return assumptions and continue to be in compliance with the Guidelines.

In making a judgement call around whether to deviate .5% up or down, financial planners may consider the following factors:

- The impact of a variation in return on the expected lifestyle of clients. As an example, it would not be prudent to increase your return assumptions to “force” a projection that secures a client’s goal.
- The propensity of clients to buy high and sell low, thereby reducing their long-term rates of return. Where the propensity is high, you may consider reducing the expected rate of return on their portfolio.¹
- The degree to which clients rely on professional financial advice in managing their investment portfolio, including regular rebalancing of their portfolio, which may increase their long-term rates of return.²

Please note that the deviation margins relate to the rate of return guidelines only, not to the inflation rate guidelines.

d) Effective date of the Guidelines

The Guidelines for 2016 are effective as at June 30, 2016.

2. CONSIDERATIONS FOR ESTABLISHING THE GUIDELINES

a) Use of external sources

The Guidelines were established using a variety of reliable and publicly available external data sources. They do not represent the individual opinions of the members of the Projection Assumption Standards Committee, IQPF or FPSC.

Using numerous sources of data also eliminates the potential effect of bias that may be introduced by any single source.

An [Addendum to the 2016 Projection Assumption Guidelines](#) provides links to sources, data and calculations used in the development of the Guidelines. The Addendum is provided for transparency and replicability of the Guidelines by financial planners and firms.

b) Aim of stability

The fact that the Quebec Pension Plan and Canada Pension Plan actuarial reports are updated every three years versus annually for the Willis Towers Watson portfolio managers' survey ensures the Guidelines will remain stable.

¹ Dalbar. (2014). 2014 DALBAR QAIB Highlights Futility of Investor Education [Press release]. Retrieved from <http://www.dalbar.ca/Portals/dalbar/cache/News/PressReleases/2014QAIBHighlightsPR.pdf>

² Masters, S. J. (2003). Rebalancing. *The Journal of Portfolio Management*, 29(3), 52-57.

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As well, to ensure stability from year to year and more closely reflect the underlying data, we have moved from rounding to the nearest .25% (in the 2009 to 2014 Projection Assumption Guidelines) to rounding to the nearest .1%³ for 2015 and 2016.

c) Limitations

The Guidelines cover the main asset classes – short-term investments, Canadian fixed income, Canadian equities, foreign developed market equities (including U.S. equities and Europe, Australia and Far East equities) and emerging market equities.

Guidelines are not provided for other asset classes, including global bonds, small-capitalization equities, value and growth equities because they are not addressed in the Willis Towers Watson annual portfolio managers' survey nor the CPP and QPP actuarial valuation reports. Similarly, guidelines are not provided for changes in the real estate market for the following reasons:

- ◆ Separate guidelines would have been required for residential, commercial and industrial buildings.
- ◆ A regional index would also have been necessary (the real estate market behaves differently in Montréal, Québec City, Toronto and Vancouver).

When making assumptions around real estate growth, it is important to consider an appropriate starting valuation for the property and use an inflation-based assumption that is suitable based on the local market context.

It is also important to note that the Guidelines do not contemplate personal risk profiles. Since an individual's risk profile or change in risk profile may have consequences at least as significant as or more significant than the rate of return guidelines used in developing financial projections, sound risk assessments are critical. A more aggressive asset allocation may be appropriate for a client with a more aggressive risk profile while a more conservative asset allocation may be appropriate for a client who can only tolerate minimal risk.⁴

3. ASSUMPTIONS SUBJECT TO THE GUIDELINES

Two types of assumptions are subject to guidelines: financial assumptions (inflation, changes in the year's maximum pensionable earnings (YMPE or MPE), short-term returns, returns on fixed-income securities, Canadian equity, foreign developed market equity and emerging market equity returns and borrowing rates); and demographic assumptions (life expectancy).

a) Inflation

This assumption is central to the preparation of medium- and long-term projections. The inflation assumption is made by combining the inflation assumptions from the following sources (each weighted at 25%):

- ◆ assumption used in the most recent Quebec Pension Plan (QPP) actuarial report⁵

³ By rounding to the nearest .25%, a 3.10% result would generate a guidelines of 3.00%, while a result of 3.15% would generate a result of 3.25%. By rounding to the nearest .1%, a 3.10% result would maintain the guidelines of 3.10% while a result of 3.15% would generate a guidelines of 3.20%.

⁴ Brayman, S, Bessner, E., Clement, R., Finke, M., Grabbe, J., & Griffin, P. (2015). *Current Practices for Risk Profiling in Canada and Review of Global Best Practices*. Retrieved from Ontario Securities Commission website:

https://www.osc.gov.on.ca/documents/en/Investors/iap_20151112_risk-profiling-report.pdf

⁵ 2013 QPP actuarial report..

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- ♦ assumption used in the most recent Canada Pension Plan (CPP) actuarial report⁶
- ♦ result of the Willis Towers Watson annual portfolio managers' survey, weighted as follows: 50% of the medium-term projection and 50% of the long-term projection
- ♦ current Bank of Canada target inflation rate

The result of this calculation is rounded to the nearest 0.10%.

A discussion was held about the use of separate inflation rates for older individuals or high earners. Two studies by Radu Chiru of Statistics Canada⁷ demonstrate that there are small differences in inflation for these two groups of Canadians as compared to others, but these differences are not deemed to be material.

i. Wage increases

The inflation assumption can be used to project wage increases by adding 1.00% to reflect productivity gains, merit and advancement. In the most recent QPP actuarial report, a final margin of 1.10% between wage increases and inflation was applied.

It may be appropriate to deviate from the Guidelines where a client reasonably expects higher or lower wage increases for the foreseeable future. As an example, where a client is reaching the end of his or her career or is in a position with no real chance of advancement, the financial planner may consider a wage increase equal to or less than inflation.

ii. Year's Maximum Pensionable Earnings (YMPE)

The year's maximum pensionable earnings (YMPE) is based on average increases in salaries. Therefore, the inflation assumption plus 1.00% should be used.

b) Nominal Returns (before fees)

Rate of return assumptions have been established for short-term investments (91-day T-bills), Canadian fixed-income securities, Canadian equities, foreign developed market equities and emerging market equities. These assumptions represent gross nominal returns (including inflation).

The Guidelines were set by combining assumptions from the following sources (each weighted at 25%):

- ♦ assumption used in the most recent QPP actuarial analysis, weighted as follows: 50% of the medium-term assumption (2013 to 2022) and 50% of the long-term assumption (2023 and later)
- ♦ assumption used in the most recent CPP actuarial report (2019 and later)
- ♦ result of the Willis Towers Watson annual portfolio managers' survey, weighted as follows: 50% of the medium-term projection (year to year) and 50% of the long-term projection (year to year)
- ♦ historic returns over the 50 years ending the previous December 31st (adjusted for inflation) or dating back to inception of the index

The historical component is based on the DEX 91-day T-bill index S&P/TSX, the DEX Universe Bond™ (Canadian bonds) index, the S&P/TSX (Canadian equities) index, the S&P 500 (U.S. equities) index, the MSCI EAFE (Europe, Australia, Far East) index and the MSCI Emerging Markets index.

⁶ 2013 CPP actuarial report..

⁷ Is Inflation Higher for Seniors? (2005) Catalogue no. 11-621-MWE2005027 and Does Inflation Vary with Income? (2005) Catalogue no. 11-621-MWE2005030

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For the sake of consistency, the aforementioned indices expressed in real returns (returns reduced by the total CPI inflation index as published by the Bank of Canada) are increased by the future inflation assumption (before rounding).

The following considerations are also of note:

i. Short-term

Over the years, some financial planners have questioned the level of the short-term investment return assumption. It may seem rather high especially these days. One has to keep in mind that the assumption represents a long-term assumption of short term investments. As an example, consider the long-term return of a mutual fund holding 5% of its assets in short term investments. Over the long term, these assets would generate a return equal to the return provided in the Guidelines.

A comparative analysis over more than 40 years reveals a slight premium for GICs over T-bills. Therefore, an additional return of a maximum of 0.30% annually over the Guideline for short-term investments could be used for five-year GICs.

ii. Fixed-income securities

The fixed income assumptions used in the most recent QPP and CPP actuarial reports have been adjusted to account for the opportunity of the QPP and CPP to buy and hold fixed income securities for significantly longer than the typical holding period of individuals. A margin of 0.75% is therefore deducted from the QPP and CPP actuarial assumptions to convert the long-term fixed income assumptions into a more relevant fixed income assumption for individual financial planning.

iii. Canadian equities

For investments in Canadian equities, a safety margin of 0.50% is deducted from the result obtained by weighting the different data sources to compensate for the variability of the long-term returns. The adjustment aligns with the outcome of a Monte Carlo analysis that approximates the probability of future Canadian equity returns by running 300,000 trial runs, called simulations. Financial planners who run Monte Carlo analyses may add back the 0.50%.⁸

iv. Foreign equities

Foreign equities consist of U.S., Europe, Australia, Far East and emerging market equities. Like for Canadian equities, a safety margin of 0.50% is deducted from the result obtained by weighting the different data sources to compensate for the variability of the long-term returns.

In terms of changes in the respective value of currencies, no guideline was set since the net long-term effect is generally nil.

v. Type of equity return

In a non-registered investment account, projections must take account of income taxes. For significant sums, it might be appropriate to divide the return into two categories: dividends and capital gains. Historically, from 25% to 50% of overall equity returns has been made up of dividends. It therefore seems reasonable to assume that 33% of the overall equity return will be made up of dividends and that the rest will be capital gains.⁹

⁸ Dupras, M. (2004, November). *Retraite et Monte Carlo. La Cible, 12(4), 6-8.*

⁹ [Projection Assumption Standards Committee analysis completed using the S&P/TSX total return index.](#)

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vi. Equity Risk Premiums

Since risk taking must be rewarded, equity returns are developed by adding an equity risk premium to the long-term bond returns. Not surprisingly, historical equity risk premiums have decreased over time due to several non-repeatable factors (mainly diversification and globalization) and are almost identical for Canadian and foreign developed markets at 2.4% and 2.8% respectively. The equity risk premium for emerging market equities is expected to be 3.7%, reflecting the additional risk inherent with investments in emerging countries. It is important to note that the world economy has become increasingly financially integrated. Countries, financial institutions and businesses have become increasingly large with a more sophisticated and interconnected range of activities. When one country experiences a financial crisis, it quickly propagates among others.

vii. Blend of Forecasting and Back-casting

The Guidelines consider both expected future economic behaviour based on assumptions provided in the QPP and CPP actuarial analyses, the Willis Towers Watson annual portfolio managers' survey as well as historical market performance. Projecting the future by relying solely on historical returns would suggest an expectation that the future will mirror the past. This is not the expectation. In addition to increasingly greater globalization, demographic changes, including labour participation rates and dependency ratios, are predicted to have a significant impact on the economy going forward. Therefore, a sole reliance on historical returns to project the future would have major limitations.^{10 11}

c) Considerations concerning fees¹²

The investment management fees paid by clients must be subtracted to obtain the net return. Depending on the type of asset management clients use (mutual funds, pooled funds, advisor managed account, etc.), these fees can easily range from 0.5% to 2.5%, except for GIC investments, since the fees are included in the rate. When a client's portfolio is made up of a wide variety of mutual funds with different management expense ratios, an average fee ratio per asset class may be used. Transparency around fees is important both in terms of the amount of fees charged (direct or indirect), the impact of fees on investment performance and the value you provide in exchange.

d) Borrowing rate

A great number of factors influence a client's borrowing rate, such as the type of loan and the client's credit history. However, consider the following relationships:

- ◆ There is a very strong correlation between the target overnight rate and the 91-day T-bill rate.
- ◆ The bank rate is set by adding 0.25% to the target overnight rate.
- ◆ The prime rate is set by adding 1.75% to the bank rate.

For an individual with an average credit rating, the borrowing rate assumption is equal to the return assumption for 91-day T-bills plus 2.00%. While recent borrowing rates have been relatively low, the Guidelines are forward looking and reflect expectations over the longer term. Primarily, the borrowing rate

¹⁰ Foot, D. K. & Stoffman, D. (1996). *Boom, Bust & Echo: How to profit from the coming demographic shift*. Toronto: Macfarlane, Walter & Ross.

¹¹ Vettese, F. (2015). *The Road to Retirement. The Essential Retirement Guide: A Contrarian's Perspective*. New Jersey: John Wiley & Sons.

¹² Lussier, J. (2013). *Successful Investing Is a Process: Structuring Efficient Portfolios for Outperformance*. New Jersey: John Wiley & Sons.

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assumption was provided to help illustrate the potential impact of a borrowing to invest strategy over the long-term. That is, while current short-term borrowing rates are low by historical standards, it is prudent professional practice to consider the potential for borrowing rates to increase for purposes of assessing the relative benefits and risks associated with leveraging. It is also sensible to use a long-term borrowing rate assumption when projecting the impact of debt on a client's financial position over the longer term. Actual borrowing costs may be more logically used for short term projections.

e) Life expectancy

There are several different mortality tables, each based on a specific target group. The following factors are examples of target group characteristics:

- ◆ gender
- ◆ smoker or non-smoker status
- ◆ place of residence (e.g., province, country)
- ◆ evidence of good health (for life insurance pricing)
- ◆ wealth¹³
- ◆ being retired

The 2014 Canadian Pensioners' Mortality Table¹⁴ may be used as the basis for assuming an individual's life expectancy. It is recommended to assume a life expectancy for clients where the probability of outliving their capital is no more than 25%. Forecasting a longer life expectancy offers protection from future improvements in mortality.

		Probability of Survival																													
		10%			15%			20%			25%			30%			35%			40%			45%			50%					
	Age	M	F	M/F	M	F	M/F	M	F	M/F	M	F	M/F	M	F	M/F	M	F	M/F	M	F	M/F	M	F	M/F	M	F	M/F	M	F	M/F
Age at which the probability of survival is reached	20	99	101	102	97	99	101	96	98	100	95	97	99	94	96	98	93	95	97	92	94	97	91	93	96	90	93	95			
	30	98	101	102	97	99	100	96	98	99	95	97	98	94	96	98	93	95	97	92	94	96	91	93	96	90	92	95			
	40	98	100	101	96	99	100	95	98	99	94	97	98	93	96	97	92	95	97	91	94	96	90	93	95	89	92	95			
	50	98	100	101	96	98	100	95	97	99	94	96	98	93	95	97	92	94	96	91	93	96	90	92	95	89	91	94			
	60	97	100	101	96	98	99	95	97	98	94	96	98	93	95	97	92	94	96	91	93	95	90	92	95	89	91	94			
	70	97	99	100	96	98	99	95	97	98	94	96	97	93	95	97	92	94	96	91	93	95	90	92	95	89	91	94			
	80	97	99	100	96	98	99	95	97	98	94	96	98	93	95	97	92	94	96	91	93	96	91	93	95	90	92	94			
	90	99	101	102	98	100	101	97	99	100	96	98	99	96	97	99	95	97	98	95	96	98	94	95	97	94	95	97			
	100	104	105	106	104	104	105	103	104	105	103	103	104	103	103	104	102	103	104	102	102	103	102	102	103	102	102	103			

Based on the table, a 70-year old would have a 25% chance of living to at least age 94 for a man and at least age 96 for a woman (25% column); by comparison, a 70-year old would have a 10% chance of living to at least to age 97 for a man and age 99 for a woman (10% column). A 70 year-old couple would have a 25% chance that one of the members of the couple will live to at least age 97 and a 10% chance that one of the members

¹³ Statistics Canada. Table 102-0122 - Health-adjusted life expectancy, at birth and at age 65, by sex and income, Canada and provinces, occasional 2005-2007), CANSIM table (102-0121). (accessed:2013)

¹⁴ [2014 Canadian Institute of Actuaries Canadian Pensioners' Mortality Report](#)

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of the couple will live to at least age 100. Again, to be prudent, it is recommended that financial planners select a life expectancy where the probability of survival is no more than 25% (25% column).

It is important to remember that this table reflects the average probability of survival for the entire population. People who do not use tobacco, people from younger generations, people who are more financially comfortable, and people who have shown evidence of good health are more likely to be in the 10% survival group.

It is interesting to note that hereditary factors are not significant in predicting life expectancy.¹⁵ In contrast, the use of tobacco has a significant impact on life expectancy. A Statistics Canada publication from 2001 concludes that a 45-year-old smoker will survive 20% to 25% fewer years, depending on sex, than a non-smoker of the same age. This could be taken into consideration by using the 30% column in the above table for smokers and the 10% to 25% columns for non-smokers.

4. GUIDELINES FOR 2016

The Projection Assumption Guidelines for 2016 are the following:

a) Inflation rate	2.1%
b) Return rates	
Short term:	3.0%
Fixed income:	4.0%
Canadian equities:	6.4%
Foreign developed market equities	6.8%
Emerging market equities	7.7%
c) Borrowing rate	5.0%
d) YMPE or MPE growth rate	3.1% (inflation + 1%)
e) Life expectancy	See table in 3 e)

5. SAMPLE APPLICATION

By way of example, for a projection prepared in 2016 for balanced portfolios broken down based on different scenarios where the fees are 1.25% annually, we could use the following return assumptions:

Portfolio return assumptions based on asset allocation				
Investor profile:		Conservative	Balanced	Aggressive
Allocation	Short term:	5%	5%	5%
	Fixed income:	70%	45%	20%
	Canadian equities:	25%	40%	35%
	Foreign developed market equities	0	10%	25%
	Emerging market equities	0		15%
Gross return before fees		4.55%	5.19%	6.05%
Assumed fees		1.25%	1.25%	1.25%
Net return after fees		3.30%	3.94%	4.80%


¹⁵ Wilhelmsen, L., Svärdsudd, K., Eriksson, H., Rosengren, A., Hansson, P. O., Welin, C., ... & Welin, L. (2011). Factors associated with reaching 90 years of age: a study of men born in 1913 in Gothenburg, Sweden. *Journal of internal medicine*, 269(4), 441-451.

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These assumptions also depend on the investor's profile not changing over the years. If a client's investor profile is likely to change, it might be preferable to consider using an "average target allocation".

It is important to note that actual net portfolio returns will depend on actual product and portfolio related fees

6. FINANCIAL GUIDELINES FOR PREVIOUS YEARS

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The following table lists the financial guidelines for previous years along with their effective dates (the current guidelines are shown for comparison purposes):

Effective date		Inflation	Growth of the YMPE or MPE	Return			Foreign Developed market equities*	Emerging market equities*	Borrowing rate
				Short term	Fixed income	Canadian equities			
2009	Feb. 17	2.25%	n/a	3.75%	4.75%	7.25%			5.75%
2010	April 12	2.25%	n/a	3.75%	5.00%	7.25%			5.75%
2011	April 8	2.25%	n/a	3.50%	4.75%	7.00%			5.50%
2012	April 12	2.25%	n/a	3.25%	4.50%	7.00%			5.25%
2013	April 30	2.25%	n/a	3.25%	4.25%	7.00%			5.25%
2014	April 25	2.00%	n/a	3.00%	4.00%	6.50%			5.00%
2015	April 30	2.00%	3.00%	2.90%	3.90%	6.30%			4.90%
2016	June 30	2.10%	3.10%	3.00%	4.00%	6.40%	6.80%	7.70%	5.00%

*previous year reports provided a 1% margin for foreign and emerging equities as a rule of thumb.