RRIFmetic- Basic Principles *RRIFmetic is not about RRIFS.*

It is 100% goal-based, fully tax-accurate, quick to source and easy to use. It integrates all investment types: registered, non-registered, TFSA, equities, real estate, as well as most non-investment cash flows such as loans, CPP/OAS, dividends, lump sums…etc. RRIFmetic applies to all individuals… working/retired, singles/couples, hi/lo net worth, trusts…everyone.)

Introduction

It is always a challenge to explain RRIFmetic to someone who is seeing it for the first time. After all, most financial planning projections are just rows and columns of numbers, and naturally you would expect the results to add up. Unfortunately, this is as far as many planners get. Once they see the results and verify that the numbers add correctly, they neglect income tax and proceed to look at the cosmetics such as graphs and report presentation. Unfortunately, many financial planning programs avoid income tax and revert to a simplistic average tax rate.

This article addresses those who expect more in the way of tax accuracy….

There are two issues you must consider when describing tax and financial planning software:- ***tax accuracy***, and the ***nature of how tax is applied***. Accuracy is fairly easy to determine. The authors of these programs will generally make it known whether their program uses an average tax rate, or is "tax-based", and even though income tax is a fairly complex calculation… complexity isn't the issue. What matters is not whether it is "tax-based" but rather ***how*** tax is computed.

Lifestyle (after tax)

By far the most important personal financial planning measurement is disposable income: how much each individual gets to spend on the necessities of life, expressed in after-tax dollars. Since lifestyle means 'after tax'; you would expect that, at the very least, the tax calculation would be accurate. Now the following is important to understand…

There are two types of 'tax-based' financial planning calculations:

1) the ***'shortfall'*** method and
2) the ***'goal-based'*** method

Here is an explanation of how these two tax-based calculation methodologies differ……

> Imagine you needed exactly $30,000 to live on. You were receiving $20,000 in pension; and wanted to know how much you should be withdrawing from your RRSP in order to deliver you exactly $30,000 –net of tax. If you had access to a tax program, you would first guess as to how much to withdraw…. let's say you tried $16,000. You enter the 16K RRSP withdrawal along with the $20,000 pension income into your tax program, and it tells you that you will owe $7,957 in tax. Now, 20000+16000-7957 will net you $28,043 which is 'short' of the $30,000 target by $1,957. Next… let's try a larger withdrawal from the RRSP…. say $18,000. This gives a tax of $8,783 and delivers an after tax income of $29,217… still a 'shortfall' of $783.
> *(This is the way 'shortfall' or 'deficit' programs work… the tax may be accurate; however the net income calculation is approximated)*
>
> Now, you could continue this top-down tax calculation until you found the exact RRSP withdrawal which delivered the $30,000 after tax target, but it would be very tedious. If you wanted to change the net income target or the inflation rate assumption, etc… you would have to revisit this tiresome trial and error exercise for each new 'what-if' change, and when you take into account that there are other cash flows such as salary, loan payments, CPP, OAS, non-registered capital, etc… then computing a 'zero shortfall' becomes impossibly time-consuming.

Recursion

This 'brute force' process of solving mathematical problems is much more common than you would imagine. Computers use this iterative process (called *recursion*) for virtually all numeric computations... square root, NPV, sine, cosine, exponentiation… are all solved using this same repetitive process. Remember when financial calculators first came out? Adding, multiplying, and dividing solved immediately; whereas annuity, IRR, etc calculations took a noticeable length of time. Naturally, as chips became faster, this wait time all but disappeared; however 'recursion' is still the method computers use to calculate math functions.

Now, you would think that today's modern high speed computers would use this method to solve the above-described reverse tax problem; finding an exact solution by automatically crunching the tax… recursively. Unfortunately, they don't. Most so-called "tax-accurate" financial planning programs don't approximate tax, they approximate net income; they simply don't do goal-seeking.

RRIFmetic solves the goal-based problem directly… no 'shortfall', no 'deficit', no surplus'.

Fortunately, differentiating the 'shortfall' from the 'goal-based' program is relatively simple: Examine the results… if you see the words 'deficit', 'shortfall', 'surplus' anywhere in the reports, or the tax doesn't check out, then it is approximating the results, and is likely a 'shortfall' program.

Another way to determine whether the program is truly goal-based is to observe the length of time it takes to compute. If, when you make a change to a data element and the results are displayed instantly, then it is almost certainly a 'shortfall' program. On the other hand, when you make a simple change to the data and you see the program pause* for more than several seconds, it is likely 'goal-based'… it is recursively seeking a solution.

(*Note: if the program you are testing is spreadsheet-based, then it will be slow by nature, and this slowness test won't apply. ***Spreadsheets are very poor number crunchers.)***

Die-Broke The final test which sets RRIFmetic apart is the 'die-broke' determination. Imagine that instead of the above $30,000 after-tax income we were trying to achieve, we wanted to know what the optimum constant after-tax income was which would cause our RRSP to exactly run out on our 95th birthday. Or, instead of dying broke, we wanted to specify an exact estate to pass on at age 95 ('die-broke' is the zero-estate version of this calculation)

So, not only are we trying to solve the reverse tax problem; we are determining exactly what level that constant net income would have to be in order to just run our RRSP out on our final birthday. This 'double recursion' takes an enormous amount of computer power….it may take up to 20 thousand passes through the full T1 (tax formula) in order to come up with an exact solution!

Can a spreadsheet do this? No. The 'die-broke/reverse tax' cash flow calculation is much too compute-intensive to be solved using spreadsheet technology.

Other financial entities Remember, in addition to your registered capital, you will have investments outside your RRSP such as equities, real estate or non-registered capital, (each of which interact with income tax in completely different ways). As well, there will be other discontinuous cash flow streams such as loan payments, lump sums, salary, business/dividend income, charitable donations, insurance premiums, RESPs, CPP/OAS, spousal/child support payments…, etc. All these investment types and cash flows have to be included in the full plan.

Speed The most important feature to look for is speed. Unless the calculation time for the die-broke projection solves in less than three seconds, it just won't get used for creative, meaningful, financial planning. Planning means "what-if-ing?"… (testing and making changes… lots of changes). Speed is absolutely essential for an effective financial plan.

RRIFmetic solves the full 'die-broke' projection in just 2 to 3 seconds.

Whether you are projecting cash flows for retirement or estate planning, insurance illustrations, pension (commuted value) studies or divorce mediation; the income tax treatment must be fully accurate and unambiguous. Approximations such as 'average tax rate', 'shortfall', and 'deficit' could, at the very least, lead to client confusion (support headaches), and at most, legal liability.

Speed, tax accuracy and the goal-based nature of the calculation combine to make RRIFmetic the only truly effective financial planning engine.

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