

## Leverage and the Guaranteed Minimum Withdrawal Benefit Plan

The following analysis and commentary is aimed at some of the finer points of financial leverage within the context of the new Guaranteed Income Withdrawal Benefit plans. It would appear that some in the insurance community are recommending that “investors in the retirement risk zone” have “good reason” to borrow to invest in guaranteed minimum withdrawal bonds.

The object of this analysis is to look more deeply at the impact of costs and risks of this strategy for a range of different returns. In short to look at the wider issues often ignored in sales and marketing presentations.

The example discussed here is drawn from a specific case. This document also notes the very loose disclosure of the risks and the costs of a leveraged GMWB exercise and, the predominant focus of the sales process on illustrations that paint the product and leverage recommendation in the best light.

Risk it would appear is painted as more the consequence of not making the investment. The problems noted here also apply to industry promotion of leverage in particular. While incidental to the analysis, the case also highlights the deficiency of the supporting sales and marketing communication in explaining the risks of leveraged strategies.

As the document also explains, the use of leverage within a GMWB structure violates the very basic risk management framework the product provides. Leverage and an inflexible GMWB structure simply do not mix. You get the worst of both worlds, higher risks and lower returns.

### 1 Leverage and the GMWB – The Basics

#### 1.1 Interest deductions

In Canada investors have the added incentive to leverage in that interest costs incurred when borrowing money to invest in income producing assets (*or assets with the potential to produce an income stream*) can be used as a deduction in calculating income tax. For higher rate taxpayers this means the ability to write off some 46% of income tax. For most individuals the tax deduction will not be as large and, even for those with a portion of income taxed at the highest marginal rate, a large element of interest may well only receive tax deduction at lower marginal rate bands.

Figure 1-1

Leveraged GMWB Example based on 40% tax relief	
Loan	\$250,000
Interest costs	7.25%
Marginal tax rate	40%
Total Interest Cost	\$18,125
Tax saving ( <i>note the fact that tax saving is offset by interest payments</i> )	\$7,250
Net interest cost ( <i>total interest cost less tax saving</i> ) – to be paid from after tax income	\$10,875
Leveraged GMWB – tax liability in first year assuming 13% gross return, 3.5% costs, 20% of return taxable at 20%.	950
Non leveraged pooled investment vehicle – annual management charges 1.5%, tax liability first year, \$10,875 investment assumed to be made at start of year.	41
Implicit tax benefit of non leveraged investment of \$10,875	2,175

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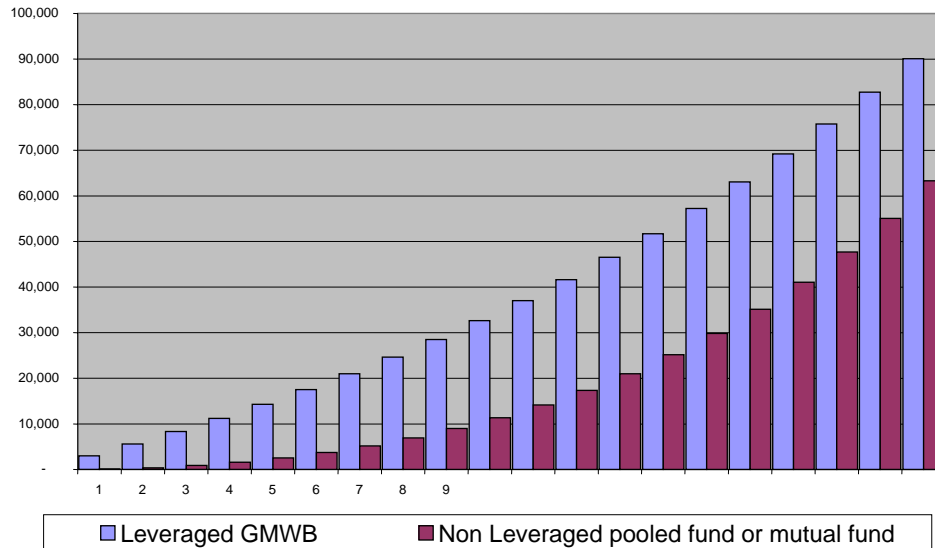
One of the opportunity costs of leverage is derived from the fact that all the returns effectively generated by the interest costs are subject to taxation. The interest costs fund the loan which must someday be repaid. This loan is the cost base and gains above this are all subject to taxation.

It is an opportunity cost because the alternative to a leveraged investment is to invest what would otherwise be the net interest cost (\$10,875 from table above). This investment provides a capital base and is a non taxable component of the investment. Rather crudely this reduces a marginal tax benefit of say 40% on a leveraged investment to an actual tax benefit of 28%. If we were to adjust only for current tax (assuming a realisable taxable gain of 20% of annual gains taxed at 20%), the actual tax benefit would fall to 34.5%.

The following (chart 1) extends this analysis and uses a leveraged GMWB vehicle with annual management expenses of 3.5% (including insurance costs) and a non leveraged alternative with annual management expenses of 1.5%. The chart shows the cumulative latent tax liability over a 20 year time frame at an average tax rate of 25% on investment income and a gross return before charges of 9.5%.

Chart 1

### Tax on latent investment gains; Leveraged GMWB versus Pooled Investment Vehicle



Another way of looking at this is to look at tax paid on taxable gains realised in any given year by a leveraged strategy. Chart 2 assumes a realised capital gain of 20% of annual gains, investment tax of 20% and a gross return of 9.5% for the leveraged GMWB. Please note that the tax payments are net of tax due on the alternative investment.

Chart 2

Net Interest & Net Tax Payments - Leveraged Loan Liabilities

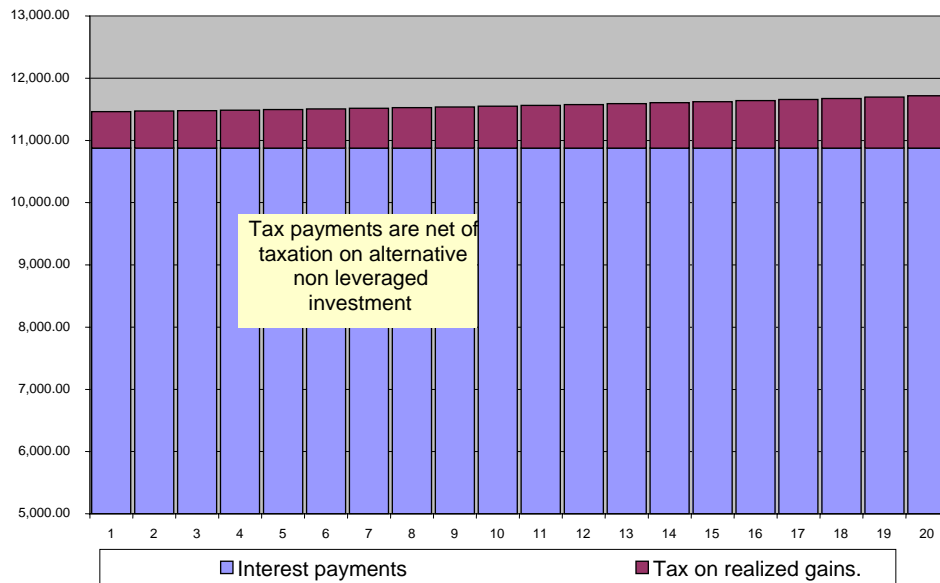
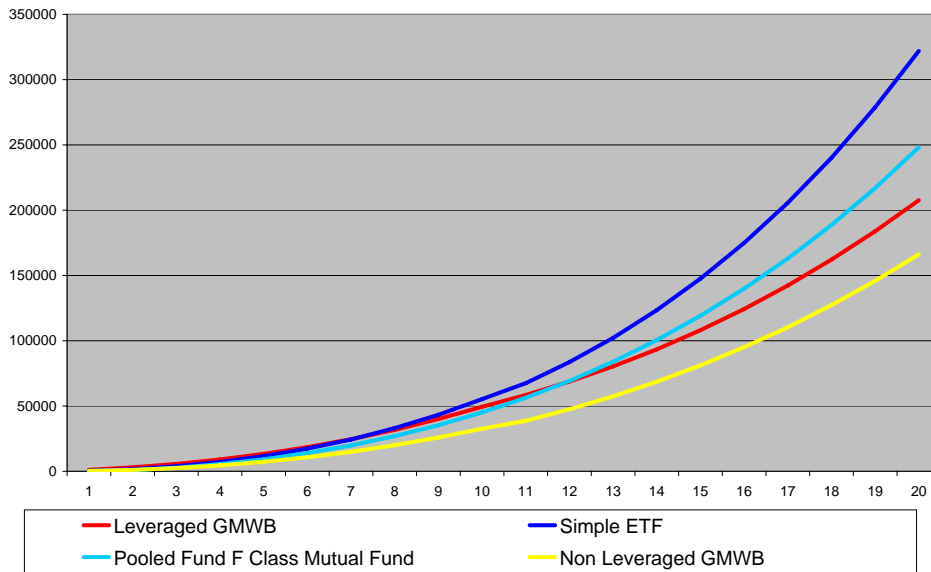


Chart 3 is taken from section 3.2.2 and shows the total return profile of four portfolio alternatives using a 9.5% gross return assumption; contributions (*net interest and net tax for the non leveraged investment*), tax paid, unrealised gains and leverage are all deducted to arrive at net values. A wider range of return assumptions are shown throughout this document, but it is important to realise that the risks of a high cost leverage investment strategy are more than just interest rate and market risk. The tax weakness of a high cost long term leveraged investment strategy is one of the many drags on total return and one of the many components of risk. Even when a leveraged investment is underperforming, its tax liabilities can still be larger than a lower risk non leveraged alternative.

Chart 3

9.5% Gross return - Opportunity costs



## 1.2 Hurdle rates

With high cost investments like the new GMWBs, borrowing to invest adds an additional cost hurdle.

Current loan rates are around 7.25%. If an individual managed to offset the entire interest rate deduction at 46% the net rate would still be some 3.92%. Because this is a net figure, we need to gross it up to find the return needed for an investment to offset its opportunity cost. If we gross it up by 25% (equivalent to a 20% tax on returns), this is equivalent to a gross rate of 4.9%. Add the GMWB charges for an aggressive portfolio of 3.5% and we get a total hurdle of 8.4%.

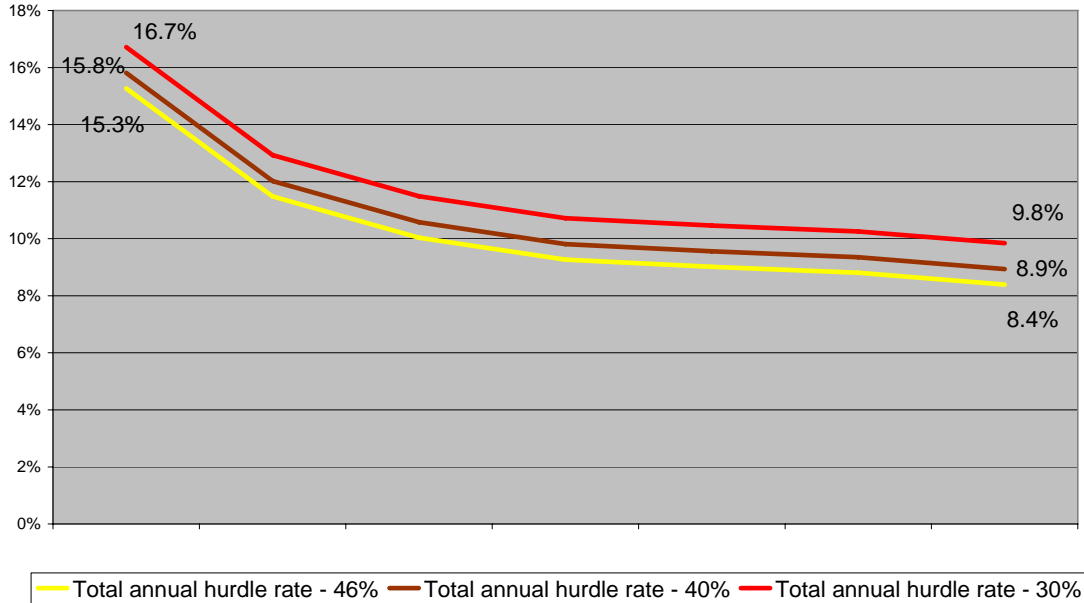
However, this is not all. If a plan has been sold on a deferred service charge basis, there will be early withdrawal penalties on the loan investment increasing the initial capital charges.

For an individual getting relief at 46% on the entire interest amount, an early redemption penalty of 5.5% grossed up to 6.88% provides a total first year hurdle of 15.3%. Indeed, given the data used here it would only be in the 7<sup>th</sup> year that the hurdle rate would fall back down to 8.4%; other GMWB policies have deferred service charges running for 7 years, meaning the 8.4% hurdle rate for the highest income tax rates would only be effective in the 8<sup>th</sup> year.

Chart 4 shows the annualised hurdle rates for a 30%, 40% and 46% average tax rate given the deferred service charges. These hurdle rates prevent investors from taking advantage of short term positive return differentials to pay off the loan early and lock the investor into longer loan periods.

Chart 4

**Annual hurdle rates for GMWB policies with leverage and early redemption penalties**



**1.3 Leverage as a strategy**

Leverage is a strategy best used by experienced investors to take advantage of periods of perceived excess return and should be accompanied by a well disciplined risk management process. Professionals who leverage will often employ point in time risk management strategies (options, futures or long/short strategies or a combination of all). The underlying costs of the investment are critical as is the ability to quickly lower leverage during unfavourable market conditions.

As far as the individual investor is concerned, it is also a strategy that either relies on excess income to fund the interest costs and/or realisations from the trading strategy to pay down the loan. If these plans are being recommended to individuals who are in the so called “retirement risk zone” (5 to 10 years prior to retirement), then we are looking at individuals who are likely to be more and not less dependent on their income. The holders of these plans may well be looking at repayment of the principal borrowed and interest thereon well into retirement. Indeed, returns do not need to be so low as to trigger this type of risk event, a factor which is lacking in advisors’ sales and marketing communication.

As the analysis in this document states, leverage used alongside a GMWB takes away its sole rationale, that of limiting the downside risk of investment. With a leveraged loan this is precisely what you are exposed to. Higher charges and the costs of insuring the underlying withdrawal guarantee add further layers of cost to a strategy best exercised outside of a high cost insurance based investment structure.

A leveraged strategy transposes a low risk GMWB investment to one exposed to extremes; the risk of significant loss and a heavy dependence on above average excess returns. In short, a leveraged GMWB is a high cost, longer term loan structure that exposes individuals to much higher levels of risk.

People may point to the fact that leverage is commonly used to buy a property with no ill effect and that the long term return differentials of property investment have tended to benefit investors through a myriad of economic conditions. There are a number of reasons to dispute the validity of such a comparison.

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1. Number 1; you cannot buy a house in annual capital instalments if you lack the capital, whereas you can buy investments in instalments.
2. Number 2; the cost of renting a property can often be greater than the cost of a mortgage, so the cost and risks are firmly weighted on property ownership and it is therefore rational to assume the debt obligation.
  - a. The costs of leverage are far greater than the costs of a non leveraged strategy, which is why you need excess returns to validate it.
3. Number 3; property ownership is not subject to management expenses over and above the running and maintenance costs of property ownership.
4. Property is a much more stable investment and one in which you can continue to benefit from even when its price has fallen and the cost of a mortgage has risen. A leveraged allocation to equities on the other hand is much more volatile; the potential disparity between rising interest rates and falling asset prices can be much wider.

It is a concern that the "low risk nature" of these GMWB investments and their purported risk management benefits are being used to support the sale of marginal benefit high risk levering strategies.

## 2 Modeling analysis

The following analysis models a leveraged GMWB investment against a number of alternative investments over a number of different scenarios.

The main assumptions used are as follows

- Annual management and insurance expenses of 3.5% within the GMWBs; alternate scenarios will look at scenarios where insurance premiums increase by 0.5% since these products also allow for higher future insurance cost deductions.
- With the exception of 2.1, simple return analysis (*where no withdrawals are made*), GMWB plans are deferred for 10 years with debt repayment being made via maximum annual withdrawals; analysis in section 3 will look at longer deferral periods and will resemble typical insurance company illustrations.
  - Maximum annual withdrawals used to pay off debt in the first instance and are netted down for tax to determine annual debt reduction. When leverage is paid off, net withdrawal figure is used to determine the gross withdrawals from the alternative investment vehicles.
  - Where withdrawals are taken, all are made at the end of each period.
- Average income tax rates on income of 40% up to retirement (10 years from inception) and 30% during retirement are also used to calculate net interest payments.
  - Net interest payments will increase when individuals hit retirement if leverage and interest rates are held constant.
- Alternative vehicles with annual management charges ranging from 0.25% for select yourself exchange traded portfolios, 1.5% for pooled funds/F class mutual funds/managed ETF portfolio and direct equity investment counsellor portfolio charges and, 3.5% for a non leveraged GMWB investment.
- A \$250,000 investment fully leveraged.

- Contributions to the non leveraged investment plans are assumed to be made 50% at the start of the year and 50% at the end of the year.
- The difference between the tax paid on a leveraged investment and an alternative investment is contributed to the alternative investment savings plan in the following year until tax on the alternative is either greater or leverage is paid off.
- Where net final figures are provided to compare leveraged and non leveraged investment values are adjusted for the following; the sum of annual contributions to the non leveraged plans (net interest and the tax differential), tax paid by investor (hence accumulated), unrealised taxable gains and, leverage and the sum of annual net interest costs for leveraged plans.
- All portfolios are assumed to realise annual taxable gains of 20% of annual returns (in keeping certain insurance company illustrations) and that investment income (capital and dividends) is taxed at 20%. All gains are assumed to be reinvested with the investor paying the tax and all realisable gains increase the adjusted cost base. All modelling incorporates a unitised structure so as to reflect the changes to the non taxable base due to contributions and withdrawals.
- ETF portfolios incur transaction charges of 1%.

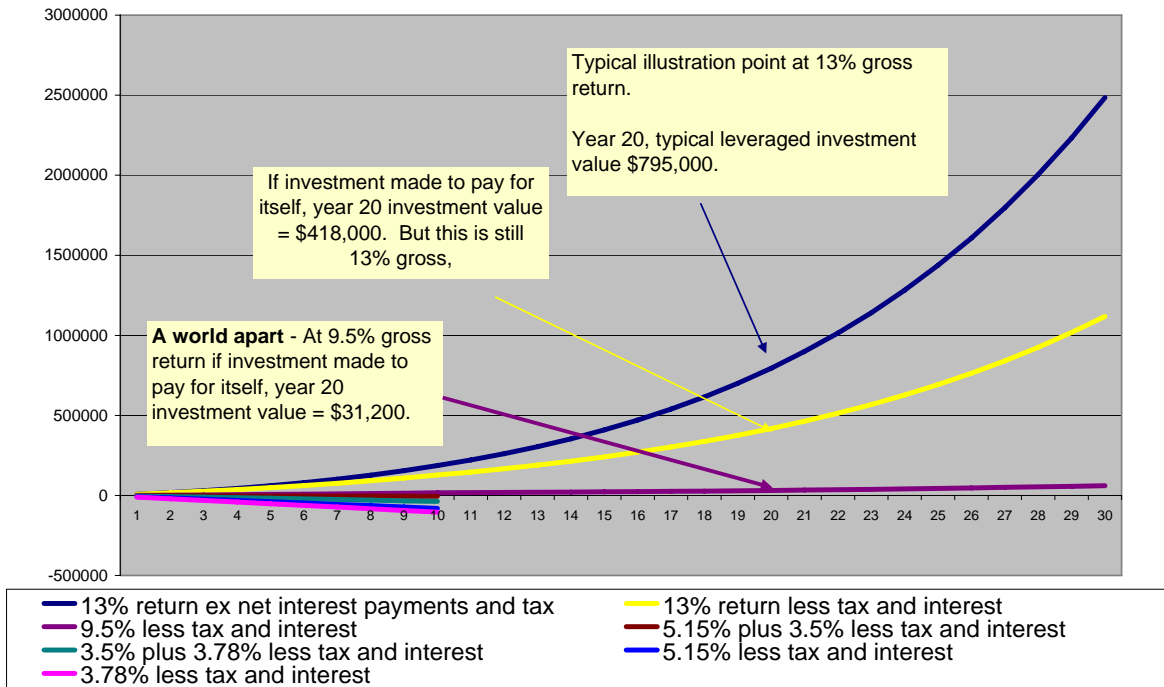
## **2.1 Simple return analysis – including net interest costs**

Chart 5 looks at the performance profile of a \$250,000 leveraged initial investment within a GMWB under a number of different return scenarios and constraints with no annual withdrawals. The range of returns used is similar to those used by life insurance companies in their own illustrations; insurers do not generally clarify whether their figures are net or gross of charges.

1. 13% (9.5% plus 3.5% annual costs) – assuming tax on realised gains and net interest costs paid by the investor.
2. 13% (9.5% plus 3.5% annual costs); assuming tax on realised gains and net interest costs are borne by the leveraged investment, thereby reducing capital available for accumulation.
  - Net interest cost is the loan interest not offset by a tax deduction. This cost is grossed up to account for tax and deducted 50% at the start and 50% at the end of the period. Instead of being reinvested, the tax liability is assumed to be withdrawn and hence not added to the adjusted cost base.
3. 9.5% (6% plus 3.5%); as 2 above.
4. 8.65% (5.15% plus 3.5%); as 2 above.
5. 7.28% (3.78% plus 3.5%); as 2 above.
6. 5.15% (1.65% + 3.5%); as 2 above.
7. 3.78% (0.28% plus 3.5%); as 2 above.

Chart 5

**Leverage & Guaranteed Minimum Withdrawal Bond - What if net interest costs and tax deducted?**



As can be seen, the typical illustration provides return projections where the investor is assumed to bear tax and net interest expenses. If these costs are assumed to be borne by the investment, total returns fall considerably. In this instance we can see even respectable returns of 9.5% per annum produce insignificant net final values.

The chart shows figures adjusted for tax paid, unrealised capital gains, outstanding leverage and net interest costs. Increases in insurance costs would reduce returns or increase losses as would increases in interest costs. Modelling leveraged investments' ability to meet their own costs (management and insurance charges) is a better way of looking at the true benefits of a leveraged strategy.

**2.2 Comparative return analysis**

The following charts show the performance of a GWMB leveraged investment at a 40% average tax rate till retirement and a 30% average tax rate thereafter (from year 11 onwards). The chart compares the leveraged GMWB to two alternative investments; a self selected ETF passive indexed portfolio with annual management expenses of 0.25% (purple) and a balanced pooled fund portfolio/F class mutual fund with an annual management expense ratio of 1.5% per annum (light blue). When the leveraged GMWB withdrawals have repaid the outstanding leverage, equivalent withdrawals (tax adjusted) are taken from the non leveraged portfolios. The two relevant leveraged GMWB lines are as follows

- **Dark blue – GWMB including outstanding leverage.** 5% guaranteed withdrawals are taken from accumulating capital; net after tax withdrawals are used to meet debt repayment or following debt repayment to fund retirement expenditure. Tax and interest assumed to be met by investor.
- **Dotted Yellow – GMWB less outstanding leverage –** As above but outstanding leverage deducted to show net value of GMWB.

Chart 6 – Gross 13% return

Leveraged GMWB versus lower cost and lower cost managed alternatives - Nominal

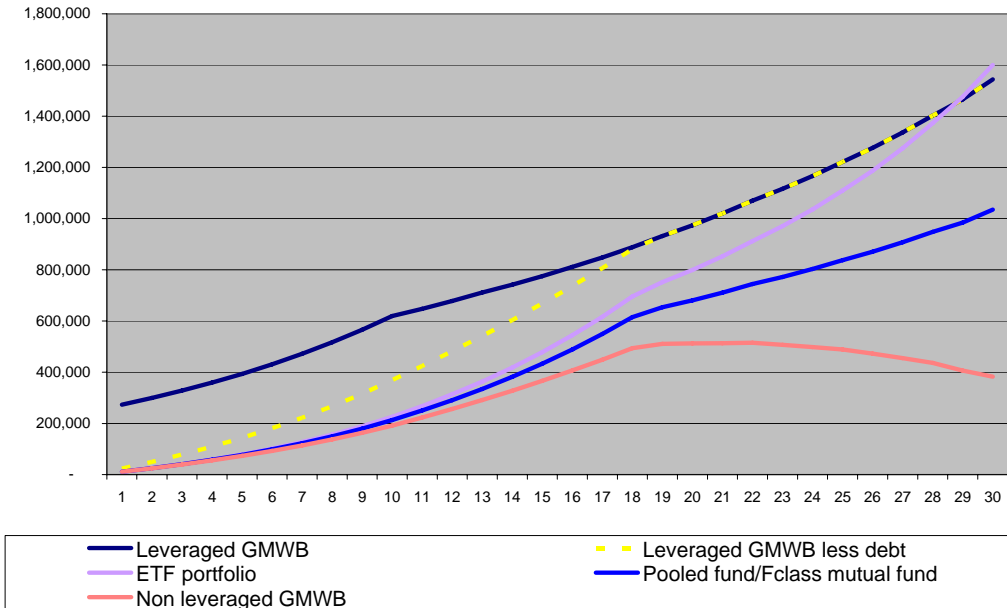


Chart 6 shows the GMWB with leverage handily outperforming the non leveraged GMWB and pooled fund option but under performing the self select ETF portfolio. The algorithms used to produce the non GMWB leveraged line are the same as those used to produce the dark blue and the purple lines. Contributions to the alternative investments include both the net interest payments and the higher annual investment tax of the leveraged option. Chart 7 shows the same data but excludes the opportunity cost of the extra tax on the leveraged portfolio's gains; see 1.1 interest deductions for further information.

Chart 7 – 13% return, without investing tax differential

Leveraged GMWB versus lower cost and lower cost managed alternatives - Nominal

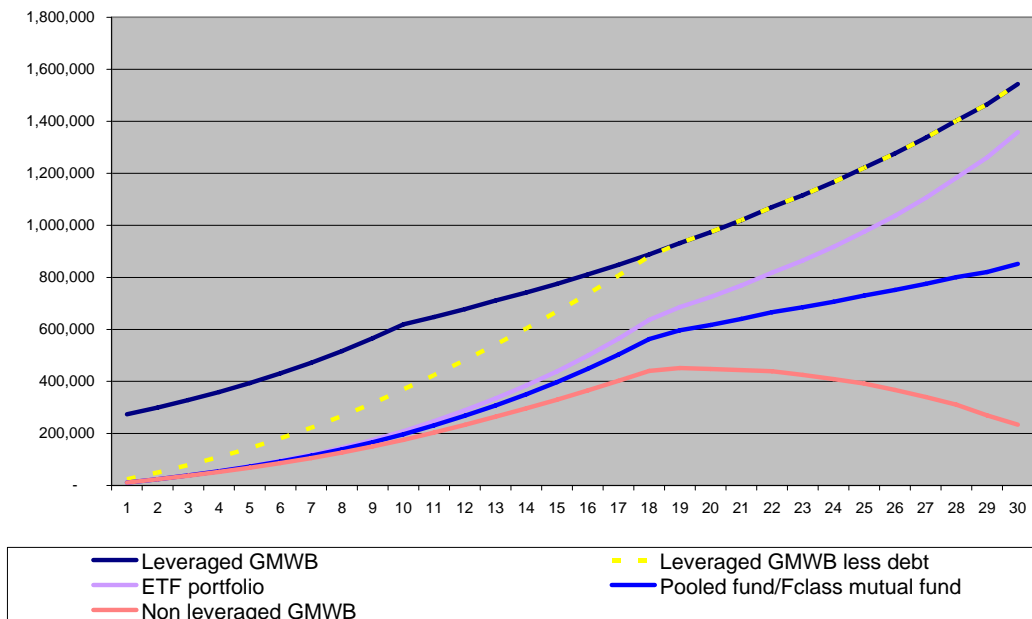


Chart 8 shows the impact of a 10% increase in the prime rate over the life of the policy and uses the same data as chart 7. Higher rates for a given rate of return increase the opportunity cost of the leveraged investment theoretically increasing the amount invested in an alternative.

Chart 8 – 13.5% gross return with 10% increase in interest costs

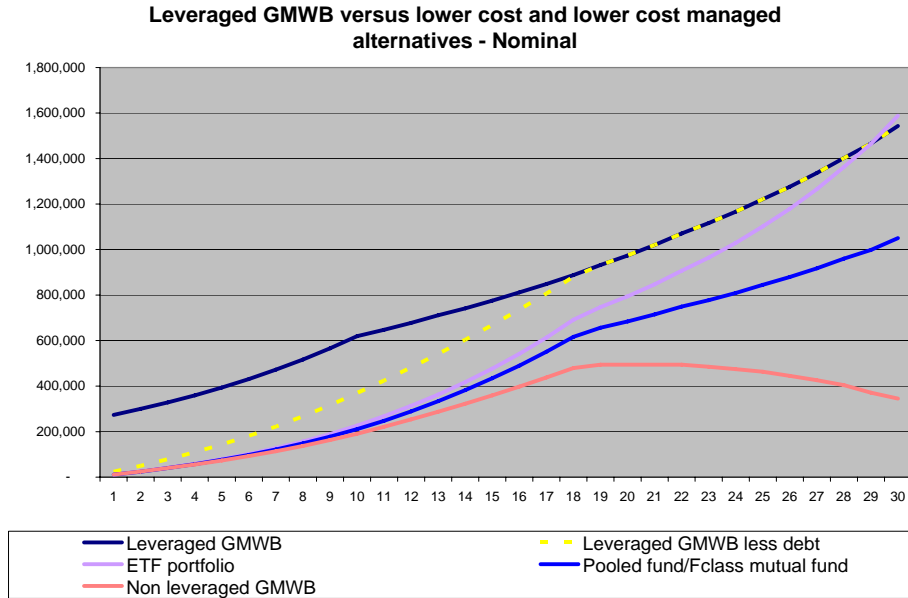


Chart 9 shows the same components and the same assumptions as chart 6 (*investment of the extra tax paid on the leveraged investment as an opportunity cost*) but with a gross return before charges of 9.5% per annum. At 9.5% the opportunity cost of the leveraged GMWB investment generates a return that is only better than the non leveraged GMWB. Chart 10 shows the above scenario without the investment of the investment tax differential as an added opportunity cost.

Chart 9 – gross return of 9.5% with tax differential invested

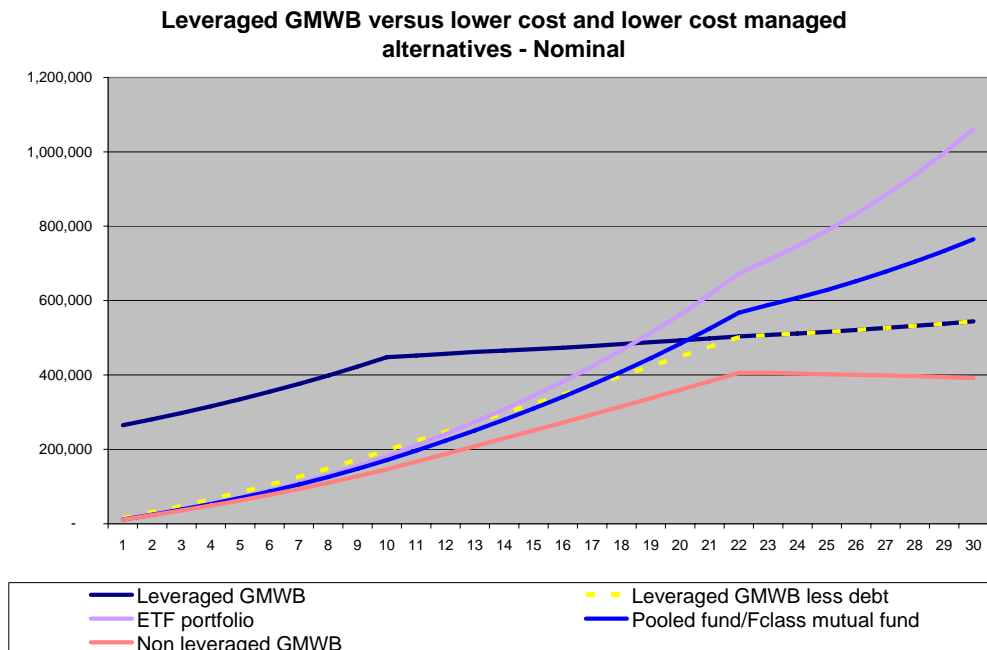
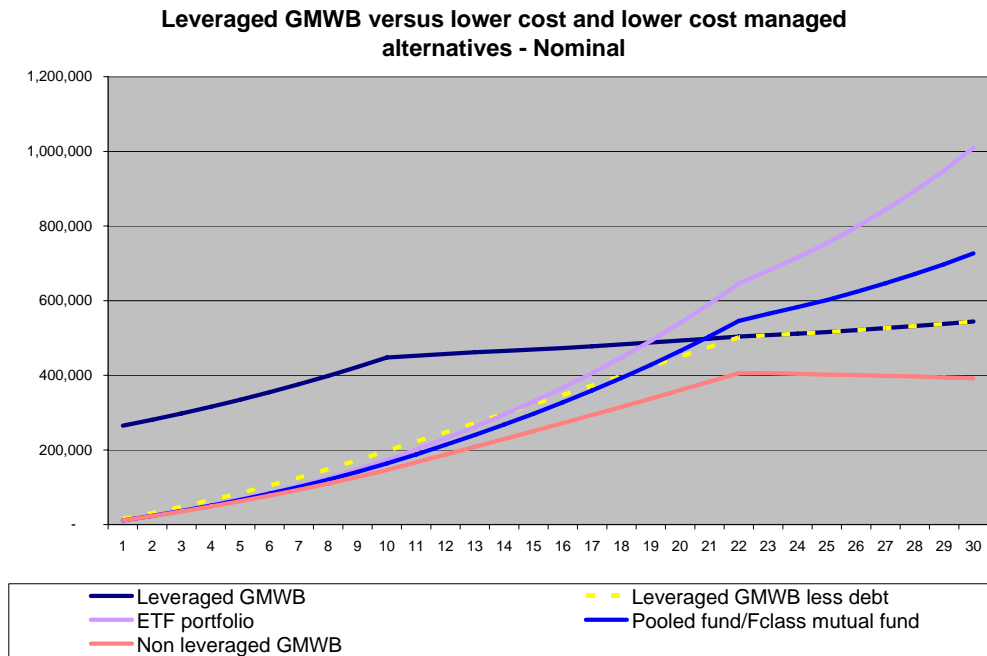


Chart 10 – 9.5% without tax differential



Even at a 9.5% gross rate of return the leveraged GMWB does not compare well to the opportunity cost of investing the net interest payments in lower cost alternative investments. Chart 11 shows the performance profile for a gross return of 7.28%, without the added benefit of investing the tax differential as an opportunity cost or the inclusion of interest rate risk. Chart 12 shows the performance profile for a gross return of 5.15%, equivalent to a net return of 1.65% for the leveraged GMWB.

Chart 11 – 7.28% gross, without tax differential

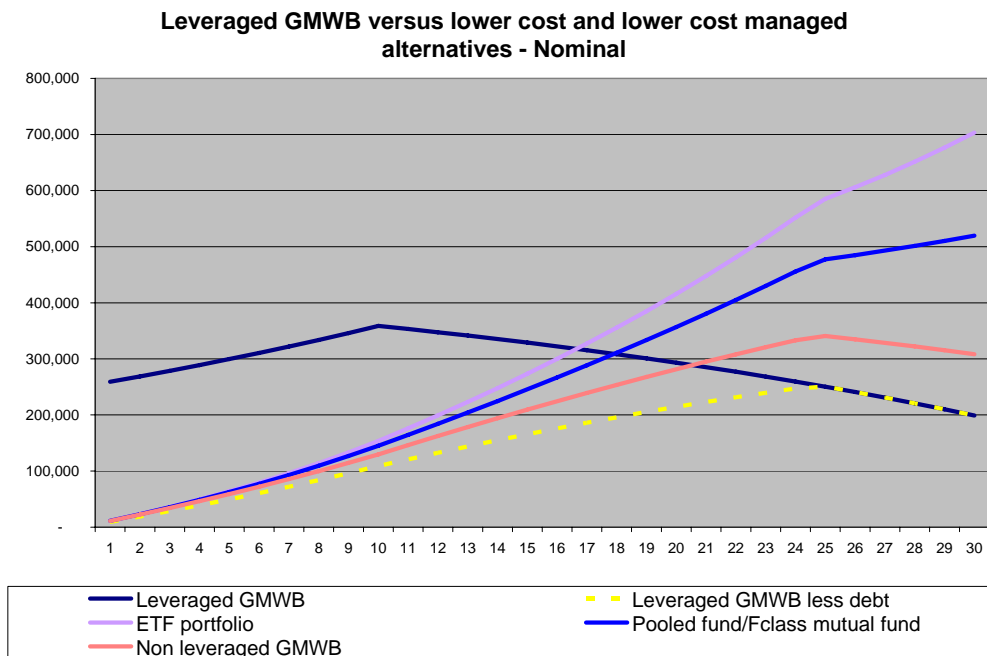


Chart 12 – 5.15% Gross no investment of tax differential

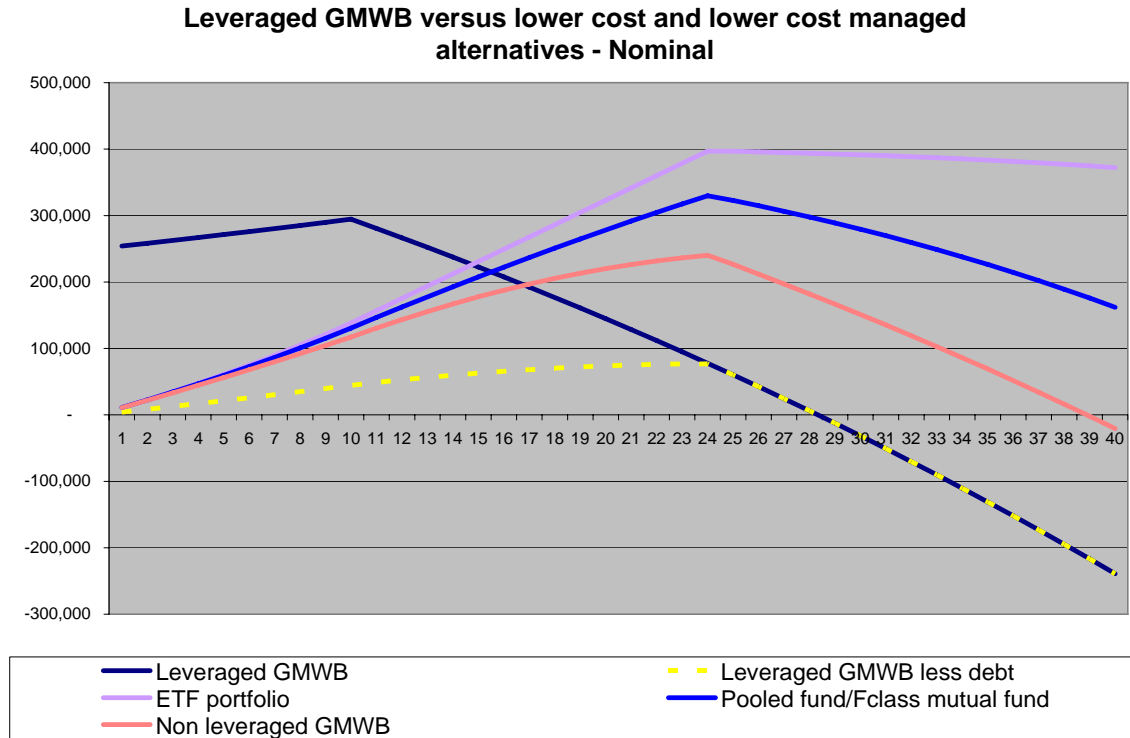


Chart 12 also looks at a 40 year horizon, 10 years of deferrals and 30 years of withdrawals. In the above situation it would only be in year 25 that an investor would be able to benefit personally from the withdrawals having had to use them to pay off the loan, let alone meet the interest which would have had to have come from income.

### 2.3 A risk perspective

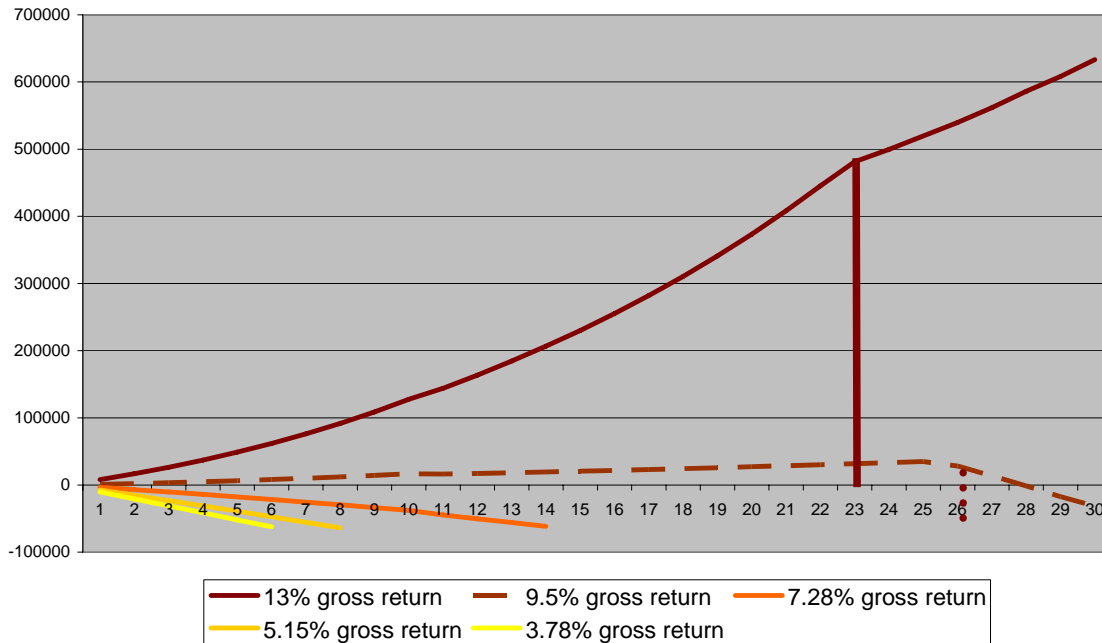
As discussed in section 2.1, in order to assess the real benefits of leverage you need to assess the ability of the investment to meet its own tax and interest costs. Retail illustrations looking at leverage do not include them for a reason, preferring instead to look at the investment of such costs into a similar non leveraged investment.

Chart 13 shows the impact of having to pay interest costs and tax internally within a leveraged GMWB while using maximum withdrawals to pay off debt and ultimately support income in retirement; this is a variation on chart 5 in section 2.1 which did not include withdrawals.

Interest expenses are met from year 1 through to year 10 and from year 11, 5% withdrawals are made from the GMWB to repay debt; during this withdrawal period the fund still has to meet net interest costs, albeit declining costs. Debt repayments and interest charges stop when the loan is fully paid.

Chart 13

**Leveraged GMWB net of loan, unrealised gains assuming payment of tax and net interest charges borne by fund**



In fact, there are only two return assumptions which suggest the leveraged investment is able to add any value. These are the 13% gross return and the 9.5% gross return (6% net return). The solid vertical lines show when the loan is fully paid off for each of these two return assumptions. The line beyond shows the ability of the remaining net balance to meet continuing 5% minimum withdrawals.

Please note that these are only modelling assumptions. A GMWB would not allow you deduct interest costs and tax from a plan and therefore the charts and illustrations shown in 2.2 would not be directly applicable. What this analysis does show is that individuals are not being properly compensated for the risks that they are taking on board with a leveraged GMWB. If the investment has to meet the risks of the leverage it can clearly not meet them. Because the investor is left to pay the net interest costs and extra tax it is the investor that is left holding the risk, not the leveraged GMWB. Understandably this not an immediately intuitive concept!

## 2.4 Modeling conclusions

The models show leveraging to be of marginal benefit only for consistently high rates of return. High costs constrain the ability of a leveraged GMWB to make returns in excess of the opportunity financing costs in anything less than sustained periods of above average long term returns.

Periods of moderate to high returns provide only marginal benefits and low to moderate returns expose investors to the risk of a lifetime of financing debt interest payments. While the downside risk management of these products may protect the nominal ability to repay the initial debt value, accumulating costs of high interest payments are the real killer and, over time are more likely to dwarf short term capital losses on leveraged investments. Underlying capital guarantees are therefore useless for managing the risks of leverage.

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A leveraged product therefore poses significant risk to financial security in retirement and goes completely against the rationale for the GMWB in the first place. Leveraging a GMWB exposes investors to much higher levels of risk than they would otherwise take even with a leveraging strategy. Investors in these products need far more than the limited disclosure of standard insurance company sales and marketing literature.

We are currently at the end of one of the longest and best periods of global stock market returns. There is no guarantee that future returns are likely to meet the higher return demands of high cost leveraged investments. If we look at historical data for the Canadian stock market from 1900 to 2000 we find that Canadian equities on average would have been hard pushed to meet the high returns demanded of these products. The highest 30 year period of average nominal returns for the Canadian market, (according to Triumph of the Optimists) was 11.4% and this was from 1950 to 1979, which also saw higher interest rates than those currently prevailing; in 1979 the Canadian Prime rate reached 15%<sup>1</sup>.

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<sup>1</sup> <http://www.fin.gov.bc.ca/PT/bcm/ref/cibcHistoricalPrime.pdf>

### 3 Insurance Co Leverage Illustrations and marketing

The following analysis uses a Life Insurer's marketing and disclosure material for its GMWB leverage loan plans.

#### 3.1 Investment loan disclosure information

This document provided illustrations for a leveraged and a non leveraged strategy. Both strategies only compared in-house GMWBs products, no alternative structures were considered. Therefore, it is possible that the use of such materials would limit the opportunity to explain the risks of the leveraged product relative to other investments and would ignore the impact of such costs on risk, which is a significant and important omission in the decision process.

##### 3.1.1 Page 1 illustration

The illustration stated a return of 9.5% but failed to qualify whether this was before or after management and insurance costs.

TAMRIS modelling conducted suggested that the 9.5% was indeed a net return as a 13% gross return with a 3.5% charge was modelled with the same data as the illustration and produced the same end figures; \$1,535,403 for the investment value and \$64,270 for the tax. Calibration of the model was also tested for net values (capital gains, interest payments) and was also found to comply with the insurance company illustrations.

The main component of the illustration showed a total net gain of \$797,968 on the leveraged investment and a gain of \$335,974 on the non leveraged strategy at the end of the 20 year period. The main point of the page summarised the return differential between the two options. The model used in the TAMRIS analysis was also compared against the insurance company figures to ensure that it was calibrated to produce the same type of output, important for ensuring that the other illustrations also had validity.

##### 3.1.2 Page 2 Illustration

The next page of the illustration on which this analysis is reviewing showed a return comparison showing three different rates (*assumed to be net returns after management and insurance expenses*) of return; 7.5%, 9.5% and 11.5%. Again, there was no explanation as to whether the return figures were net or gross of management and insurance expenses. There was also no comparison with respect to the opportunity cost of the return on a non leveraged investment.

No figures were provided for the alternative investment returns for the 7.5% (assumed 11% growth) and the 11.5% (assumed 15%) growth rate.

While reference was drawn to an interest rate at which the client would lose money (3.78%) and the rate at which both strategies would break even (5.15%), there was again no explanation as to whether these were net or gross figures. A return of 3.78% would be considered low, but not so low if management and insurance costs of 3.5% had already been deducted. If management and insurance costs had not been deducted the net return would be lower still at 0.28%. No assessment of the risks and impact of interest costs in the event of poor performance was illustrated. Indeed no figures were provided to illustrate the risks of lower returns at all.

The TAMRIS model checked the assumptions used and found that a net 3.78% return (7.28% gross) would produce a marginally negative total return supporting the output of the illustrations. A net return of 5.15% (8.65% gross) produced a marginally better return for the non leveraged strategy, again supporting the calibration of the models used to assess the leveraged GMWB vehicles.

The focus of the illustration and attention was on the returns the strategy could generate under relatively positive conditions and for a single stand alone product. There was insufficient information on the assumptions underlying the illustration for the ordinary investor to be able to understand them.

“Important notes about this illustration” were provided at the back but the risks discussed in the back were not part of the illustration. There was no visualisation or illustration of the risks and the only illustrations that were provided, gave no guidance as to the probability of negative return scenarios or any other specific information that would have enabled investors to develop an objective assessment of the significance of the risks.

The ability for an investor to be able to form an independent and objective assessment is important when one considers all the other sales material that exists.

## **3.2 Alternative modelling scenarios**

The following analysis uses modelling based on the precepts of the insurance company modelling; that is a 20 year period at the end of which leverage and capital gains are paid off. The model used has been as closely as possible calibrated to the insurance company’s own modelling to make the analysis as relevant as possible.

### **3.2.1 True illustration of leveraged return**

The major difference between the insurance company analysis and that followed in this section is that a) taxes on gain within the GMWB plans are not reinvested (*the investment pays the tax not the investor*) and, b) net interest costs of leverage are borne by the GMWB investment.

The only scenario in which taxes on gains and interest costs are subsumed by the investor is that denoted by the **dotted red line** in chart 14.

By looking at how the investment with a high annual management expense (*plus insurance costs*) can cope with the real costs of leverage, we can provide a better illustration as to the actual costs and benefits for a given growth assumption.

- Chart 14 details five different scenarios showing a range of gross returns from 13% to 5.15% gross.
- With the exception of the dotted red line, all scenarios assume tax and interest costs are borne by the fund.
- The values of all investments are reduced by the latent capital gains tax and outstanding leverage. Latent capital gains are accumulated gains that have not been realised but would be subject to tax if and when the investment was sold.
- The **dotted red line** shows the modelling of the insurance company’s central return assumption; a gross return of 13% broken down into 9.5% net return and 3.5% annual costs. The underlying modelling for this line assumes annual tax and interest costs are borne by the consumer. Latent capital gains, the sum of tax paid by the investor (at each given point), the sum of net interest payments paid by the investor (at each given point in time) and the outstanding leverage are deducted from the GMWB value to arrive at a net figure.
- Where tax is deducted from the portfolio, the taxable portion of return has been held at 20% (same as the insurance company) and tax rate on investment income has been held at 25% (same as the insurance company illustration).

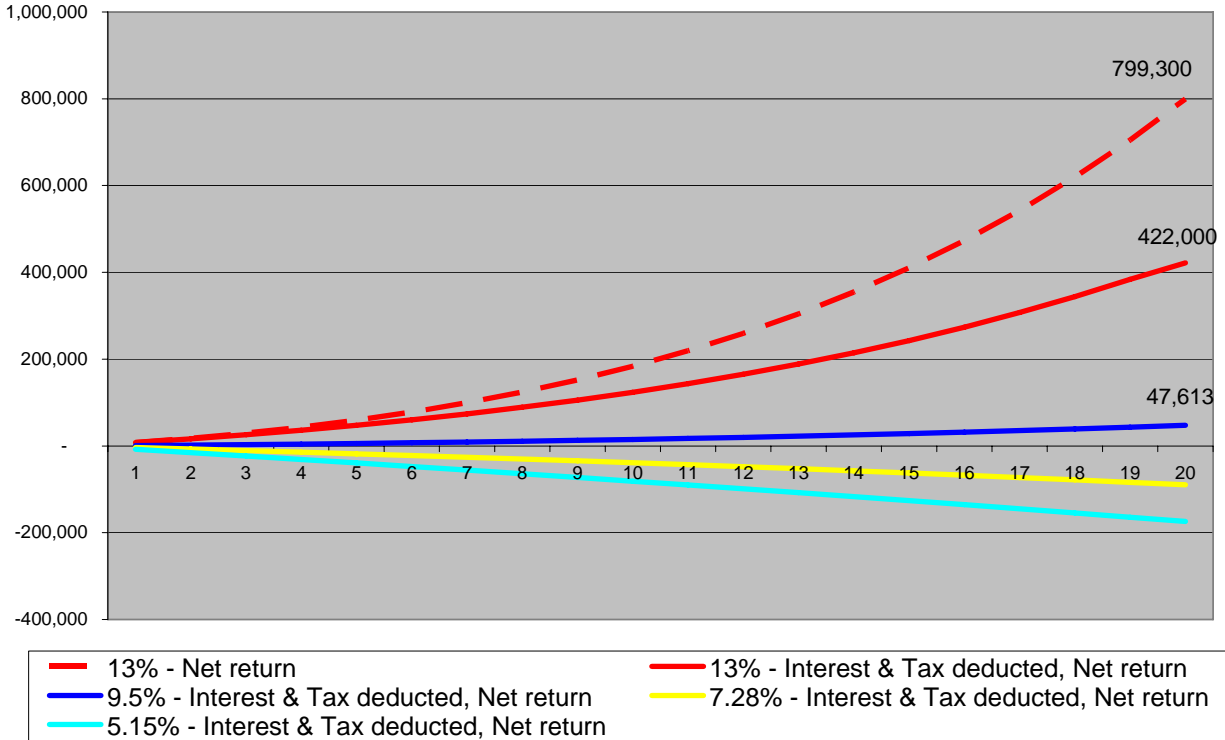
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- A loan interest rate of 7.25% and marginal tax rate of 40% have been used; again in keeping with the insurance company illustration.

The chart therefore shows the net return to the investor after all taxes and expenses and debt have been paid, at all points in time.

**Chart 14**

**Total cost illustration - annual compound return less tax on gains, less net interest costs, less latent capital gain, less leverage**



The dotted red line and the thick red line show the same gross rate of return and use the same data. The difference lies in the fact that the solid red line deducts tax and net interest costs from the portfolio as it accumulates instead of being met by the investor and netted off at the end of the period. The dotted red line is tied to an illustration that only adjusts for these costs at the end of the 20 year period, when the sum of tax and interest costs is deducted from the end value. The true line for the investor is the red line, since this represents the true cost of the exercise.

Table 1 compares the insurance company basis for illustrations at three different rates of return to the TAMRIS basis for modelling the true nature of return and costs. The TAMRIS illustrations in the table use the same assumptions used by the life company with the exception that tax and net interest costs are borne by the fund each year. Instead of an illustration of 13% annual return showing \$1,535,403 in 20 years time, a more relevant end period value of \$788,555. Instead of a net value of \$799,300 in 20 years time we have a more relevant net value of \$427,678.

Table 1

13% gross, 9.5% net return	\$ gross	\$ net of all leverage, tax and opportunity costs	Difference
Insurance co illustration ; Interest and tax paid by investor	1,535,403	799,300	736,103
TAMRIS analysis; Interest and tax paid by portfolio annually	788,555	427,678	360,877
<b>11% gross, 7.5% net</b>			
Insurance co illustration ; Interest and tax paid by investor	1,061,963	424,691	637,272
TAMRIS analysis; Interest and tax paid by portfolio annually	494,506	180,486	314,020
<b>7.28% gross, 3.78% net</b>			
Insurance co illustration ; Interest and tax paid by investor	525,065 -	7	525,072
TAMRIS analysis; Interest and tax paid by portfolio annually	176,533 -	89,571	266,104

### 3.2.2 Opportunity cost comparisons with real investment alternatives

The insurance company illustrations only looked at one non leveraged investment alternative. This was the same high cost GMWB. As noted in section 2.3, the use of leverage within a GMWB does not actually provide a risk management function.

The following charts compare the performance of the leveraged GMWB investment, the non leveraged GMWB investment, a simple ETF portfolio and an F class or pooled investment vehicle. Tax on all investments are assumed to be paid for by the investor as per the insurance company illustrations and all figures are net of outstanding leverage, accumulated tax paid by investors, total contributions made in the case of the alternatives and latent capital gains tax (tax due on unrealised gains as opposed to tax paid on realised gains. No withdrawals are made over the period.

Chart 15 looks at a gross return of 13% with the tax differential invested as an opportunity cost and chart 16 without the investment of the tax differential. Chart 17 a gross return of 9.5%, chart 13 a gross return of 7.28% and chart 14 a gross return of 3.78%.

Chart 15 – Investment of Tax Differential

13% Gross return - Opportunity costs

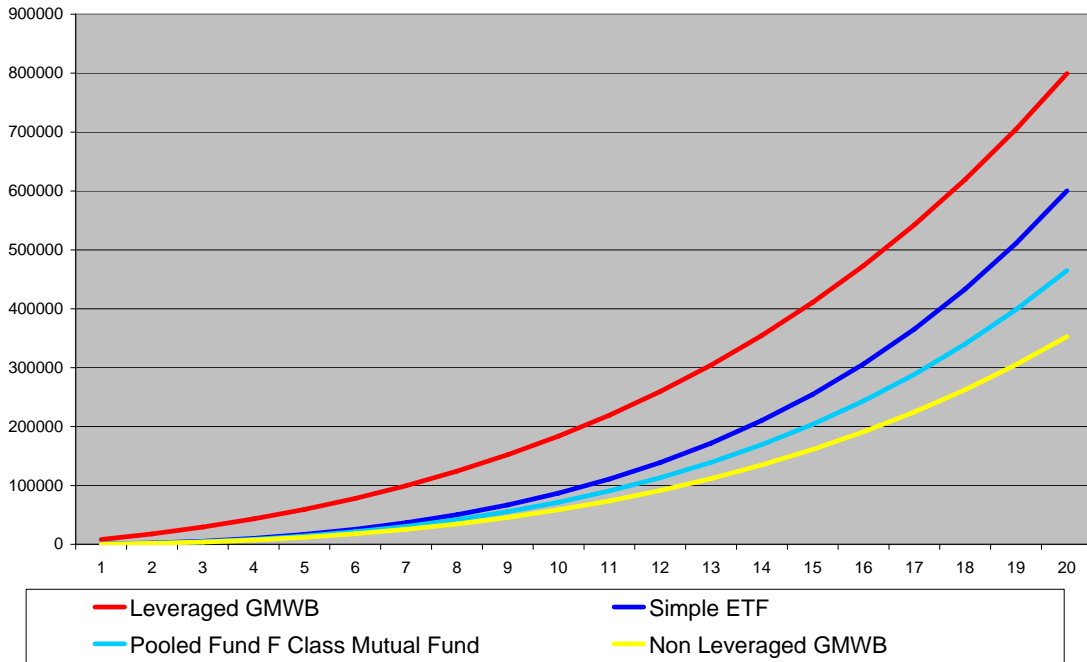


Chart 16

13% Gross return - Opportunity costs

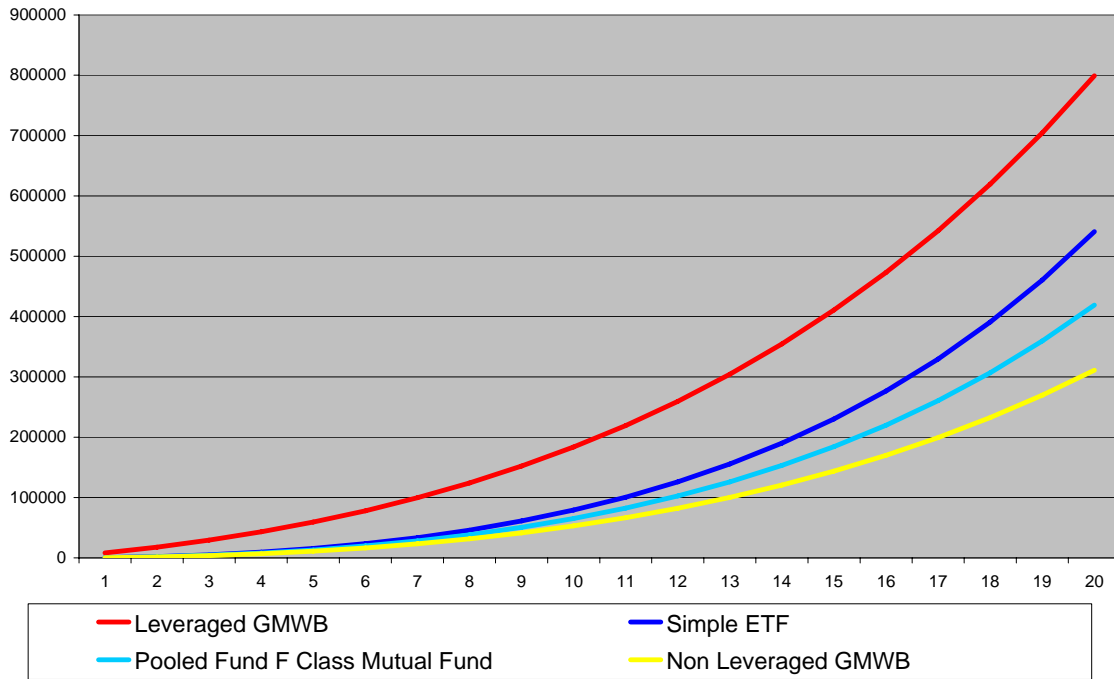


Chart 17 – Investment of Tax differential

9.5% Gross return - Opportunity costs

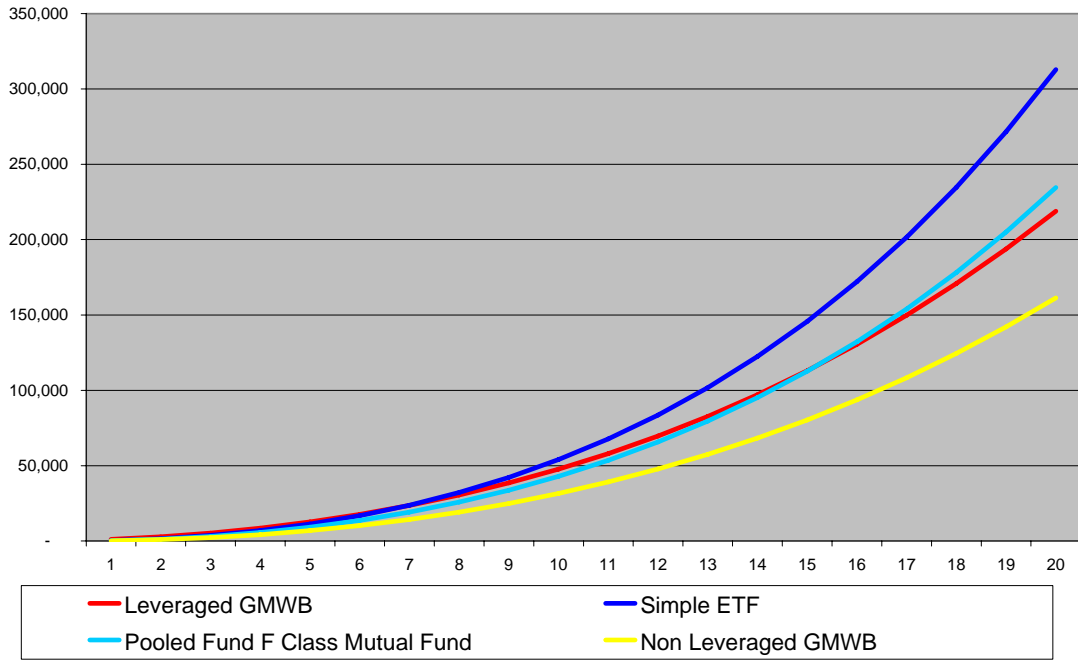


Chart 18

9.5% Gross return - Opportunity costs

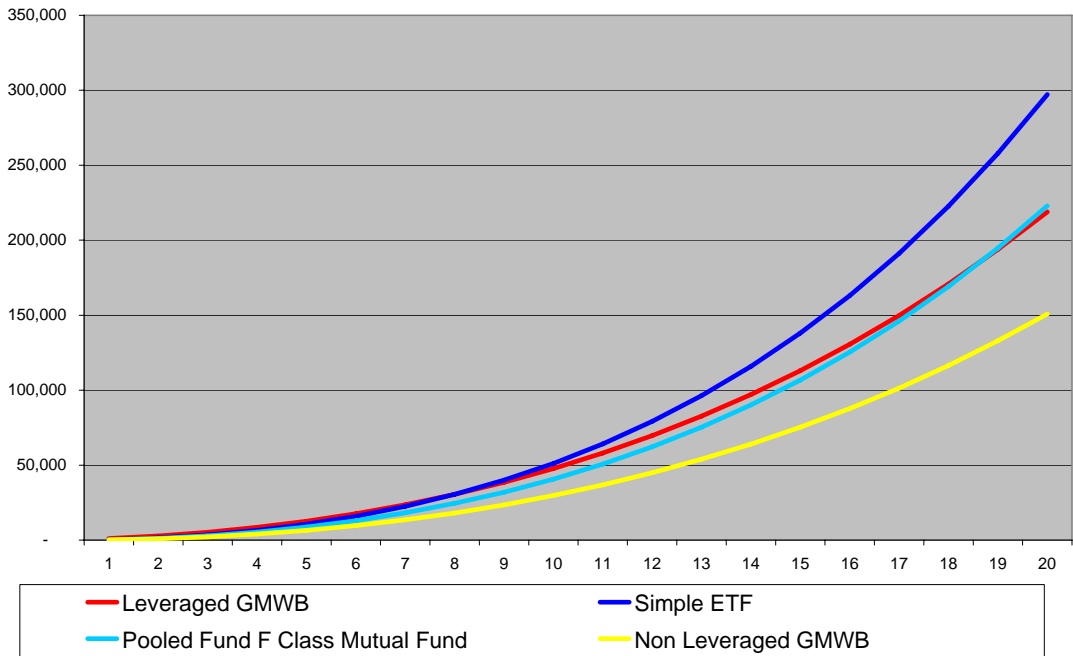


Chart 19 – Investment of Tax differential

7.28% Gross return - Opportunity costs

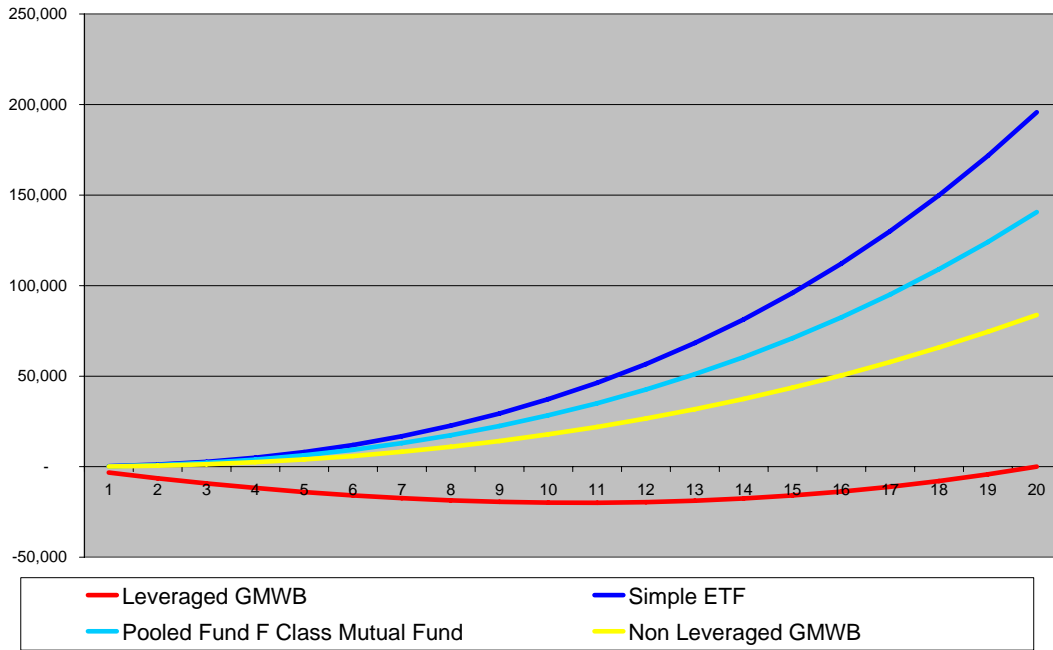
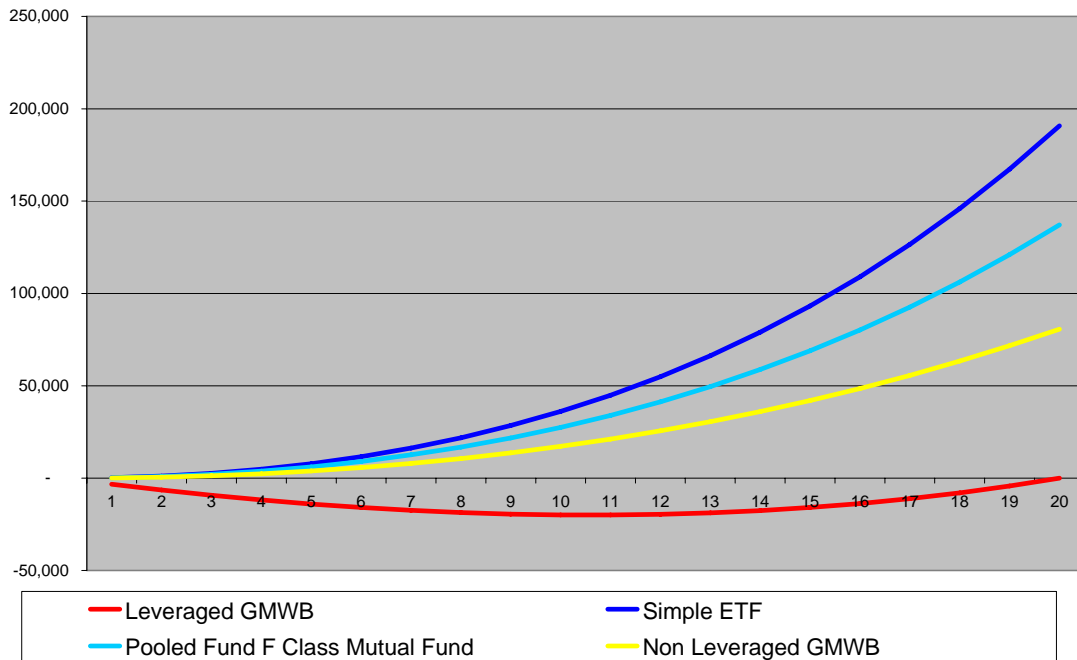


Chart 20

7.28% Gross return - Opportunity costs



The above charts clearly show that use of a leveraged investment in a high cost guaranteed insurance vehicle only pays at high rates of return. Once returns drop, the risk of the investment rises significantly. Indeed at 9.5% a leveraged GMWB is beaten by a none leveraged pooled or F class mutual fund. .

It is worthwhile noting that interest rate risk and lower returns tend to move together. As such, an increase in the cost of borrowing would see a fall in future returns further degrading the validity of most leveraged GMBW illustrations. If investors were shown the above charts and analysis it is likely that they would be less likely to accept such a higher cost/high risk investment proposition.

Needless to say, a leveraged allocation to a lower cost vehicle would produce higher returns for a lower level of risk. If investors do wish to take on board leveraged strategies they should really seek professional management of the risks than rely on high cost, inflexible products.

### **3.3 Other marketing material**

On reading a number of client/advisor communications it appears that there are a number of misrepresentations about the risks and return profiles of these products. A brief summary and discussion of these issues are noted here.

- The GMWB product is stated as allowing clients to invest *for continued growth while being assured that savings can provide a predictable stream of income to help fund retirement.*
  - With the client more exposed to market and interest rate risk, the net withdrawal available for spending in retirement is likely to be much more uncertain. What was a low risk/lower return product has with leverage been transformed into a much higher risk investment.
- That because a client is in the retirement risk zone *“where the sequence of returns creates additional risk”* that advisors have stated that they can *“clearly able to demonstrate”* that they *“could take most of that risk off the table with the unique product”*.
  - Whether or not one holds the view that it is the sequence of returns or market and economic risks that pose a risk to investor security in the 5 to 10 years prior to retirement, one thing is clear, taking a leveraged investment exposes you to higher levels of market risk. How a leveraged high cost product takes risk off the table is difficult to envisage and certainly requires a mathematical proof.
- That the recommendation to use a loan for the purchase of a GMWB *“was able to buy investments with added growth potential and income protection”*.
  - As illustrated in this report, a GMWB backed up by a loan does not provide added income protection. In fact it reduces income protection by increasing the risk of the investor of having to finance the debt out of income for long periods of time whilst in retirement.
- That clients for some reason or another not explained *“would have a pool of tax paid money outside of an RSP”* and that by combining the investment loan with the GMWB that *“they were able to create the most tax efficient income in Canada during retirement”*.
  - The GMWB is hardly a pool of tax paid money and it is unclear what this actually means. Secondly it is unclear just why combining an investment loan with a GMWB provides such a tax efficient income in retirement.
- That the real advantage of the leveraged loan and GMWB was, in so many words, that it built up “open” assets “that did not require a major tax rinse in order to access them.

- Non RRSP GMWB investments are exposed to taxation just like any other and access is much more restricted.

## **4 Conclusion**

Guaranteed Minimum Withdrawal Benefit Plans are high cost investment vehicles in their own right. That said, they do guarantee to provide a very basic level of capital protection irrespective of whether you feel the cost is excessive or not. Tying leverage into the product, however, completely defeats its object, turning it into a much higher risk and higher cost investment vehicle with high hurdle rates required to beat non leveraged lower cost investment vehicles.

In earlier reports into GMWB products concern was expressed over the potential uses of these new products. That these products are now being tied to high risk leverage strategies confirms the TAMRIS Consultancy's considerable reservations about the potential for abuse.

The risk warnings and the illustration of risk and return in sales, marketing and disclosure documents is clearly insufficient to allow the client to make an objective opinion as to the true risks of a leveraged GMWB investment.