"Other" Actuarial Evidence Practices

A primer for AE practices in areas not covered specifically in CSOP

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Note: this paper is specific to Ontario practices resulting from Ontario law. Comments about similar or differing practices in other jurisdictions are welcomed.

LIFE INTEREST & RESIDUAL INTEREST

"Present value of future interest/dividends/foregone rent (a life annuity function) + Present value of residual interest (a single premium life insurance function) = current value of the subject portfolio/property/estate".

$$ia_x + (1 + i)A_x = 1 \qquad \text{(Jordan 3.12)}$$

The most frequent issue in these valuations is in selecting an appropriate rate of interest for both determining the annual income to be valued and for discounting the resulting annuity to determine its present value. If the interest rate is too high relative to current market interest rates used for indexed or non-indexed pensions, then the value of the residual interest will be implicitly understated, and vice versa.

Mortality assumptions are usually based on most recent census mortality table. Exception: where a pension or life annuity is involved directly or peripherally, it may be preferable to use a pension mortality table for purposes of consistency.

Interest assumptions are usually straightforward in cases involving investment portfolios. Depending on the mixture of debt instruments and equity investments, the investment yield rate and the valuation discount rate should be consistent with the gross and net interest rate used for marriage breakdown or civil litigation valuations.

Interest assumptions are often more difficult in cases involving a rent-free life interest in a home, where the imputed rent supplied to the actuary is far in excess of the current real-return bond rate. Example: children of the deceased party's first marriage own the residual interest, and want to buy out the widow's life interest in the family home. Suggested possible remedies:

1. Divide the supplied imputed rent figure into a "pure" interest component and a property tax + utilities + renovations component. Evaluate and report on each component separately, and demonstrate that the present value of the pure interest component plus the value of the residual do indeed reproduce the current marker value.
2. Calculate the present value of the residual interest first, and then calculate the value of the life interest by subtraction.

Question: does "rent" typically include an allowance for depreciation in the property value? If so, how should this be reflected in the equation or the valuation interest rate? Would this require us to request a breakdown of value between house and property?

CAPITALIZED VALUE OF SUPPORT PAYMENTS

On the surface, calculations involving present value of support payments (to children or spouse following marriage breakdown) appear to be somewhat trivial. The complication is income tax.

As a starting point, mortality and interest assumptions should be consistent with those used in pension valuations (substituting census mortality tables for pension tables in cases where there was no pension to be valued).

Two minor modifications which may be required:

1. Where child support payments are of relatively short duration, the interest rate may need to be modified to reflect the shorter duration.
2. Calculations of spousal support may need to reflect a reduction in the monthly payment when the spouse reaches age 65, to reflect CPP and OAS income.

However, the major problem is income tax consequences in cases where monthly support payments would be tax deductible to the payor and taxable to the recipient, but a lump-sum payment would not. Consider the following example:

Husband has taxable income of $50,000 annually (31% tax bracket) and property of $100,000 from the forthcoming sale of the matrimonial home. Wife has taxable income from part-time employment of $15,000 annually (22% tax bracket), $100,000 equity in the matrimonial home and an Ontario Hospitals pension worth $150,000. The "default option" would be for her to pay him $75,000 to equalize property, and then for him to pay her (say) $1,300 monthly (tax deductible to him, taxable to her) until they both retire at age 65 in 20 years. The actuary is retained jointly to place a lump-sum value on the future support payments as a possible offset to the property equalization payment.

From the husband's viewpoint, the support payments have an after-tax cost to him of $897 monthly (indexed for inflation), so the capitalized value of his future after-tax obligation is roughly $170,000. From the wife's viewpoint, the monthly support payments would result in income of $1,014 monthly after tax, with a resulting capitalized value of roughly $195,000. (As in most real-life cases, there is no income tax on investment income to be considered here.)

I would suggest that the actuary should present both sets of figures in the report, and explain the tax disadvantage which produces the difference. I would suggest that the report should also show the midpoint value ($182,500 in this example) as a possible compromise.

CAPITALIZED VALUE OF DISPUTED LTD PAYMENTS

Litigation involving disputed individual or group LTD insurance benefits usually revolves around the question of whether or not the plaintiff is disabled as defined in the policy. A request from the plaintiff's lawyer to calculate the capitalized amount of the disputed payments is usually for purposes of pre-trial mediation rather than for the trial itself.

The defendant insurance company would prefer that the valuation be based on the same claims continuance tables that it uses for reserve valuation purposes. However, those tables are based on a broad average of non-homogeneous claimants including those with relatively short-term disabilities and those with terminal illnesses. After confirming with the client or lawyer that the plaintiff's disability is expected to be permanent but not life-shortening, the actuary's report would be based on most-recent census mortality and would contain wording similar to the following:

> *"As requested, I have assumed that Ms. Plaintiff's disability is total and permanent as defined in the insurance policy, but that it will have no significant impact on her life expectancy prior to age 65."*

The interest rate used in calculations done for mediation purposes should be consistent with current market interest rates for future payments with similar inflation-indexing characteristics. The actuary should be careful to extract the appropriate inflation indexing provisions from the insurance policy (not always the same as the simplified description in the employee manual). For example:

> Policy inflation provision: 100% of CPI to a maximum of 3% in any year
> Current tort interest rate (net) = 1% for 15 years, then 2.5%
> Current tort interest rate (gross) = 4.55% per annum, perpetually
> Implied inflation rate = 3.5% for 15 years, then 2%.

In this example, if there is a carryover of inflation rates in excess of 3% in any year, then the valuation interest rate would be 1.5% for the first 15 years and 2.5% thereafter. However, if there is no carry-over, then I would suggest that the average rate of increase in LTD benefits in the first 15 years might be assumed to be 2.5%, and the resulting valuation interest rate would be approximately 2% for 15 years and 2.5% thereafter.

RELATED ISSUE: Some insurance companies, both life and P&C, make offers near year-end to selected permanently-disabled clients under which a specified lump-sum payment would be made in lieu of ongoing disability or Statutory Accident Benefit payments.

Obviously, the amount of the offered lump-sum payment would be less than the amount held in the company's actuarial liabilities for that claim. The typical settlement offer based on a claims continuance table might be considered to be fair for the "average" claimant. But from the perspective of a permanently-disabled claimant who is likely to

receive monthly payments until age 65, the offer is usually much less than the amount that an independent actuary would calculate.

The client's lawyer will often request an independent actuarial opinion as to the fairness of the offer. Before undertaking a formal valuation and report, the actuary may wish to provide a verbal "internal user" report to the lawyer, advising whether the offer appears to be much less than the value that would be obtained using appropriate mortality and market-rate interest assumptions, and advising that these offers are typically non-negotiable "take it or leave it" shotgun offers.

The actuary may also find it instructive to solve for and comment on the interest rate that would balance the equation. In some cases, the client may wish to accept any lump-sum offer that is based on any interest rate which is less than the credit card rate or other interest rate that he or she is paying on accumulated debt.

PENSION LOSS IN UNLAWFUL DISMISSAL LITIGATION

A lawsuit for lost income resulting from unlawful dismissal will usually boil down to the earnings plus employer contributions to pension and other benefits for a reasonable notice period of 12 to 36 months (depending on the individual circumstances).

The value of employer contributions to pension can often be simplified and approximated as 5% to 10% of basic earnings (varying with the richness of the pension formula, contributory vs non-contributory pension plans and most importantly the age of the individual). Alternatively, a pro-rata increase in the pension's termination commuted value is often a practical value for this purpose. Except as described below, detailed calculations are often not cost-justified.

At the other extreme, the actuary should be alert to situations where an additional 12 or 24 or 36 months of service would have satisfied conditions in the pension plan for early-retirement rights, including subsidized early-retirement discounts which are subject to service qualifications.

Intermediate situations requiring an independent valuation usually involve employees who are old enough to make the valuation worthwhile, but not old enough to retire with an immediate pension yet. In Ontario and possibly other jurisdictions, the actuary should be alert to the following:

- A successful plaintiff does not get his or her old job back. The employee is still assumed to terminate employment, but at the end of a suitable notice period.
- By law, no increase in salary/earnings should be assumed during this notice period. This has ramifications for final average salary pension plans.
- Accordingly, the actuary's task is usually to determine the additional annual pension that would accrue to the plaintiff's credit for each 12 months of additional service credit, and then to determine the additional termination/transfer/commuted value of that additional pension, at the given valuation date.

This may be the only instance where an AE actuary needs to be familiar with the details of pension termination value calculations