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**SOME ACTUARIAL QUESTIONS ON MARITAL DISSOLUTION**

by Ralph Garfield

A growing field for actuaries in these disharmonious times is the value, in event of marital dissolution, of fringe benefits, specially of pension benefits earned while married.

Discussion centers on the assumptions used to determine the present values, e.g., the "right" interest rate, the "right" retirement age, the effect of taxation; seldom do we discuss the life contingencies involved. I suppose this is because it's natural to calculate the present value using the factor  $\ddot{a}_{r-x}|_x^{(12)}$ , where  $r$  is the assumed retirement age. I am questioning this factor! But first I want to raise a similar question in "wrongful death" cases.

**Wrongful Death**

In calculating a settlement for loss of income in the event of "wrongful death", it seems natural to use the factor  $\overline{a}_{x:r-x}$ . Any argument typically involves assumptions for interest rates, future pay raises, inflation, etc. However, since the plaintiff is suing for loss of income and would only have enjoyed the deceased's income if both were alive at the same time, surely the factor should be  $\overline{a}_{x:y:r-x}$ , where  $y$  is the plaintiff's age. After all, if the plaintiff dies along the way, he or she would receive no benefits from the income; they would hardly bury the money along with the plaintiff.

I have not searched the literature to see if this view is accepted; however, Miles M. Dawson in his 1904 paper to the International Congress gave formulas involving joint life contingencies. Also a Swiss actuary discussing J. H. Prevett's 1968 Institute of Actuaries paper (J.I.A. 94, 293) asserted that in his country the courts have accepted use of joint annuity values.

**The General Case**

Returning to the divorce situation: to avoid repeated use of phrases such as plan participant, spouse, him, her, let us define the following:

- A — denotes plan participant currently age  $x$  retiring at age  $r$ .
- B — denotes spouse currently age  $y$ .
- $u$  — denotes difference in their ages, i.e.,  $x-y$ , which may be negative.

P — denotes a straight life pension accrued to A while married.

The actuarially equivalent qualified 50% joint and survivor pension we'll call  $\hat{P}$  where:

$$\hat{P} = P \cdot \frac{\ddot{a}_r^{(12)}}{\ddot{a}_r^{(12)} + \frac{1}{2}(\ddot{a}_{r-u}^{(12)} - \ddot{a}_{r:r-u}^{(12)})}$$

Now B will only enjoy A's pension if both are alive when A reaches age  $r$ . After all if B dies while A is in active service, then B is in no position to enjoy any of those pension credits. Once A retires and while B is also alive, B, under

the equitable distribution rules, would receive 50% of the joint pension; furthermore, if B is alive at A's death, B would enjoy the full 50% reversionary annuity, (after all, these are the benefits being given up because of the divorce). Thus at retirement B's share is

$$\hat{P} \left[ \frac{1}{2} \ddot{a}_{r:r-u}^{(12)} + \frac{1}{2} (\ddot{a}_{r-u}^{(12)} - \ddot{a}_{r:r-u}^{(12)}) \right] = \frac{1}{2} \hat{P} \ddot{a}_{r-u}^{(12)}$$

The value of B's share should be:

$$\hat{P} \cdot \frac{D_{r:r-u}}{D_{x:y}} \ddot{a}_{r-u}^{(12)}$$

If the actual pension is other than the above 50% joint and survivor annuity, the formulas would be changed.

Then there is the question of the ERISA death benefit in the event of A's death while in active service during the time he was eligible to retire early.

All this is very complicated especially to judges and attorneys who usually have only a rudimentary knowledge of discounting anyway.

Could it be that the whole premise of calculating the present value of the accrued pension is wrong? One might argue that the "right" amount to go into the pot for equitable distribution is the amount contributed to the plan on A's behalf plus interest, since if there had been no pension plan this amount could have been paid to him as salary and perhaps gone into savings. True, in large plans no individual allocation by participant is made; however, an estimate using an individual level premium funding method is feasible.

Much of the above can be considered as random muse (to steal an old actuarial quotation). I would be interested in other views. □

**PARADOX**

"It is an irony of existing regulation that, if the life insurance industry in the United States were required to file financial statements according to the statutory rules of the United Kingdom, most companies would be insolvent; and if the life insurance industry of the United Kingdom were required to file financial statements on the basis of statutory requirements in the United States, most companies also would be insolvent."

James C. H. Anderson,  
in his company's publication  
**EMPHASIS**

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