

The Present Value Calculation:

A Sleeping Tiger

By Hal Rosenthal

With an understanding of applicable concepts and considerations, CPAs can use their accounting skills and business experience in the preparation of present value calculations at a quality level that can equal or exceed that of other expert witnesses.

Litigation damages that are related to future losses are always calculated based upon the present value of those losses. Certain elements of the present value calculation are widely misunderstood or overlooked. The resultant erroneous or misleading calculations can have significant consequences, not only to the litigants but to the CPA expert as well, including possible impeachment during the trial.

CPAs should be aware of the elements most often found to be at the heart of less-than-acceptable present value calculations.

Matching of Damage Frequencies — Background

Seemingly least known of the errors is the failure to match the present value calculations with the frequency of occurrence of the underlying incidents of damages.

The plaintiff has a right to recover damages exactly as the damages would have occurred in point of time. The loss of 52 weekly salary payments per year is not presumed to have been exchanged for a phantom single salary payment on the last day of the year ("annual payment convention").

While use of an annual payment convention (or a mid-year convention) may be convenient for calculation purposes, many CPAs are not aware that its use can and does impose an unjustifiable penalty upon the plaintiff. The penalty to the plaintiff is in the form of understated present value, and it arises because the annual payment convention results in a lower total present value amount than that arrived at by matching present values to the damage incident frequencies.

In other words, CPAs should calculate a present value figure for each damage item. For example, damages based upon the loss of 52 weekly salary payments require 52 present values. While 30 years worth of such damages results in 1,560 line items, the task is not at all burdensome. Computerized spreadsheets permit such calculations to be made in a matter of minutes and can be used to support summary sheets prepared for exhibit purposes.

Matching of Damage Frequencies — In the Field

A random test of several popular calculation software programs advertised for use by experts showed that the software calculated present value amounts without regard to this matching concept. Furthermore, many exper-

rienced experts routinely apply a lumping of each year's losses into a single "payment" at the last day of the related year.

Argument that the use of the annual convention or the mid-year convention represents a step toward conservatism, and indeed they do, but only if used knowingly for that purpose. If the annual convention were used knowingly, a disclosure of the same could attend its use, if only to circumvent the appearance of intentional misrepresentation.

Matching of Damage Frequencies — The Calculation

An easy and jury friendly way to do the calculation is to use a well thought out computerized spreadsheet showing the present value amount alongside each weekly, semi-monthly, or monthly damage/payment figure falling within the damage period.

The net damage amount shortfall for a \$4,000 monthly payment (versus a \$48,000 single annual payment) going 20 years into the future at a 1.6 percent annual inflation rate, and using a 5.5 percent discount rate, amounts to over \$7,500. The deficiency will be even larger if either semi-monthly or weekly damage frequencies apply instead of monthly, or if larger loss amounts are involved. Materiality and accuracy should be judged from the vantage point of the plaintiff's pocketbook, as opposed to an auditor's perspective — the plaintiff will not think it "reasonable" that his or her money be left on the table for the convenience of the expert's calculation.

A handy illustration can be taken from the sample calculation contained in the American Institute of CPAs Consulting Services Practice Aid 98-2, *Calculation of Damages From Personal Injury, Wrongful Death, and Employment Discrimination* (page 32), based upon a salary of \$78,000 per year. In that analysis, the damage claim was based upon annual salary figures. The present value calculation as shown for the seventh year is based upon the assumption of lost salary and fringes for the year in the amount of \$104,855, and having a related present value in the amount of \$72,079.

By comparison, assuming (by way of demonstration) that the \$104,855 damage amount is based upon 26 salary payments within the year instead of a lump sum at the end of the year, the damage calculation shortfall amounts to roughly \$1,900 for that year alone (See Ex-

(continued on next page)

The Present Value Calculation

(continued from page 11)

hibit A). The shortfall would be even greater if the salary was weekly.

Discount Rate

The discount rate¹ used to measure present value is inversely proportional to the net result; the higher the rate, the lower the present value, and visa versa. The difference in the amount of present value of a fixed annual sum, over a 25-year period, amounts to almost 20 percent greater when using a six percent discount rate versus an eight percent discount rate or, similarly, a 4.5 percent rate versus six percent (not counting factors for inflation or other increases as might apply in a real damage situation).

Such materiality strongly suggests that CPAs properly understand and evaluate the factors which should be considered to determine the amount of the present value discount rate.

Factors to Consider in Determining the Discount Rate

The discount rate discussed in this writing does not contemplate risk factors that some practitioners have been found to combine with the rate of a safe investment in arriving at present value.

1. The discount rate, "the rate of return for safe investments of capital to an ordinary person unschooled in making investments"² and "the rate at which an ordinary and prudent person — an unskilled investor — would invest his or her funds for such a term."³ So, what some investment expert or economist might recommend is less compelling than the choices to be made and the methodology to be used by the plaintiff or by the average jury member.

The expert should attempt to place himself or herself in the shoes of the plaintiff. Some of the things that can be done include: find out the available interest and earnings rates offered by the plaintiff's bank, just as

Exhibit A

Given annuity payments of equal amount in the aggregate within a year, one to be paid in 26 installments during the course of a year and the other in a single payment at the end of the year, the amount needed to fund the single payment is less because of greater interest earnings on its larger average principal balance throughout the year.

Accordingly, the fund needed at the beginning of the year is lower for the single annual payment than for the 26 installment payments. Stated in the alternative, the higher the payment frequency, the higher the present value.

Since the beginning of the year fund (2) for 26 payments within the year is greater than the fund for a single payment, the resultant present value of the larger fund calculated six years earlier will likewise be greater.

Year Seven (10/1/04 - 10/1/05)

Pay Periods	Earnings, as Damages	Fund at start of year
1	4,032.88	4,024.37
2	4,032.88	4,015.89
3	4,032.88	4,007.45
4	4,032.88	3,999.05
5	4,032.88	3,990.68
6	4,032.88	3,982.34
7	4,032.88	3,974.04
8	4,032.88	3,965.77
9	4,032.88	3,957.54
10	4,032.88	3,949.34
11	4,032.88	3,941.18
12	4,032.88	3,933.05
13	4,032.88	3,924.95
14	4,032.88	3,916.88
15	4,032.88	3,908.85
16	4,032.88	3,900.86
17	4,032.88	3,892.89
18	4,032.88	3,884.96
19	4,032.88	3,877.06
20	4,032.88	3,869.19
21	4,032.88	3,861.35
22	4,032.88	3,853.55
23	4,032.88	3,845.77
24	4,032.88	3,838.03
25	4,032.88	3,830.32
26	4,032.88	3,822.64
Totals	104,855.00	101,967.99 (2)

Present Value at 10/1/98

Present value of fund (2) at 5.5 percent,
6 years to 10/1/98 73,951.86 (3)
Present value per page 32 of Consulting
Services Practice Aid 98-2 72,079.00

Variation **1,872.86**

Assumptions:

1. Payment due at end of each bi-weekly period.
2. If this fund were on hand at January 1 of current year and earned interest at a 5.5 percent annual rate, it is sufficient to exactly pay the 26 salary payments of \$4,032.88 listed above.
3. For the sake of conservatism, annual compounding is used.

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safe only if held to maturity.**

**Their market values swing in inverse
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the plaintiff might do; look at the newspapers and periodicals available to the plaintiff to see what rates are shown there; and examine the plaintiff's tax return to see his/her typical investments and interview the plaintiff for the same purpose.

Of course, if the plaintiff is a business entity rather than an individual, stepping into the plaintiff's shoes involves taking a look at the plaintiff company or companies. The CPA must determine if the business activities of the companies, or its personnel in the conduct of their company duties, afford the plaintiff an investment capability advantage above that of an ordinary person.

2. The investment upon which the

(continued on next page)

The Present Value Calculation

(continued from page 13)

discount rate is based should match the time period of the damages that the proceeds of such investment are to serve. If the financial damages cover a period of six years, it is inappropriate to use 30-year treasury bonds as the basis for the discount rate.

Treasury bills and bond investments are safe only if held to maturity. Their market values swing in inverse proportion to market interest rates. If such investments must be sold prior to maturity so as to provide funds to cover the periods during which the financial losses are to occur, the non-stability of their market price makes such investments unsafe and therefore unsuitable for use as a discount rate indicator. Accordingly, attributes of appropriate investments must include maturity dates falling within or around the damage period.

3. The investment must be safe. It is a given that the best and safest invest-

ments yield only a moderate return.

4. "Area investment rates" must be considered, within the plaintiff's immediate geographic area. Rates in south Florida are typically lower than rates, for example, in New York City.

5. Rarely is it so that a single investment is controlling. Generally, a range of rates related to two or more acceptable investments should be considered.

When a suitable range is determined, the CPA can select from it in various ways. The average might be used, or the high end may be used so as to produce a conservative result. Or, both the high and low can be used to present two separate damage amounts, leaving the choice to the jury or to the trier of fact.

However it is used, consideration of such a range adds credibility as well as reality. It is also a good smell test.

Conclusion

Good present value calculations are

founded less upon mathematics and expertise than upon common sense and reality. Making the calculation real makes it right.

For CPAs, computerized spreadsheets are recommended over the use of raw formulas or a set of tables because the results are more visible, easier to understand and control, and less subject to error.

With an understanding of the applicable concepts and considerations, CPAs can use their accounting skills and business experience in the preparation of present value calculations at a quality level that can equal or exceed that of other expert witnesses. ■

¹Exclusion of tax considerations.

²Stein on Personal Injury Damages, Second Edition.

³Ibid.



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