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NOTES

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Where Have All the Black Pharmacists Gone?
Litigation, Affirmative Action and Government Statistics

Clifford B Hawley*

Introduction

The Human Resources Division of a large national corporation regularly compares the racial and gender composition of its workforce with government statistics For good reason, the comparison is occupation by occupation rather than a simple aggregate of all occupations For each occupation, the firm lists its percentage black and percentage female, compares each with national statistics and if required by law, files detailed EEO-1 reports with the appropriate government agency [1] That report will list occupations where black and/or female representation is less than the national average and, in addition, it will include detailed documentation of the company's Affirmative Action plan to increase representation It may also provide similar information for other protected groups The plan might include a discussion of skill requirements for the position and past and future search efforts to recruit qualified minorities and women Other firms that are more regional or local do the same comparisons but may rely on government data that is state, SMSA, or MSA based

Another corporation is sued over this very issue Turned down for employment, a black person becomes a plaintiff in a lawsuit alleging racial discrimination in hiring A forensic economist is hired and he or she finds that the company's percentage black in the occupational category for which the plaintiff was considered for employment is well below the national average Casting the forensic report in terms of the number of standard deviations of the disparity, the report finds that the disparity is more than two standard deviations below the national average Plaintiff's attorney now has prima facie evidence of racial discrimination [2]

The first story above is an everyday occurrence for personnel divisions of firms covered by either federal or state civil rights laws No firm can afford to ignore its affirmative action responsibilities today Workforce analysis of the firm is part of that responsibility The second story is common in litigation over such an issue. There is no necessity that the case be a class action in order to introduce workforce statistics as evidence For example, in a recent case a forensic economist retained by plaintiff's attorney compared a firm's minority figures on the occupation Pharmacist with national data [3] National data for

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[1] For example, federal contractors employ about one third of the workforce and under the Federal Contract Compliance Program are obligated to take affirmative action to insure equal opportunity in employment

[2] This is a reference to the *Castaneda-Hazelwood* standard See Hawley (1992) or Piette (1991) for a discussion of the requirements for a prima facie case

[3] I use the word minority and black interchangeably for ease of exposition only

1993 showed that 6.1% of pharmacists were black[4] Let's call the firm the XYZDrug Company Firm data showed that 12 of the firm's 400 pharmacists, or 3 0 percent, were black[5] The expert used the binomial model to find that the firm's percentage was 2 59 standard deviations below the national average and the corresponding prob-value or p-value was 0 0048. Below is the expert's presentation

# of Pharmacists in XYZ Workforce	# of Black Pharmacists at XYZ	Expected # of Black Pharmacists @ 6 1%	Disparity	Standard Error	# of Standard Deviations From Exp	P-value
400	12	24 4	-12 4	4.787	-2 59	0.0048

The standard error for the binomial is the square root of 400* 061* 939 or 4 787[6] The number of standard deviations is the difference between the actual and expected divided by the standard error with the negative sign to indicate under representation of minorities at the XYZDrug Company The p-value or prob-value shows the probability that a selection process independent of race would produce twelve or fewer minority hires in four hundred opportunities

Clearly the forensic economist has presented evidence that sheds light on the minority representation of the XYZDrug Company's pharmaceutical workforce How strong is this evidence? Is it compelling? What statistical arguments can be made to refute this evidence or at least put it in proper perspective?

Certainly several standard and by-now common arguments come to mind The first would be to examine the appropriateness of using data that is national in scope The analysis presented above presumes that the labor market for pharmacists is a national market Second, even though XYZDrug Co. is described above as a national firm, its local offices and branches might not be distributed across the U S in a way that mirrors the distribution of black pharmaceutical talent Regional or smaller geographically based statistics may be more appropriate Hiring may be from a series of local or regional markets[7]

Third, all of these statistics, whether national or regional, are *representation* statistics and the analysis above is a comparison of workforce representation and national representation Since the lawsuit is a hiring case, one might argue that applicant flow data

[4] *Statistical Abstract of the United States 1994*, Table 637, page 407

[5] Obviously, the XYZDrug Company is fictional and exists only in my imagination All characterizations of the firm including numerical representation are fictional and used for illustrative purposes only However, the forensic economist's presentation, use of government data as a benchmark, and the issues this raises are based on an actual court case

[6] More generally, the standard error for the binomial is $[n\pi(1-\pi)]^{0.5}$ where n is the number of selections and π is the probability of success (here, a minority hire)

[7] See Shoben (1986) for a discussion of issues involved in defining the appropriate pool for comparison

that reveal the proportion of minority applicants is more appropriate than the stock data used here. The courts generally agree unless there is evidence that the firm has discouraged minority applications Suppose though that it is the case here that applicant flow data is unavailable Since it is not available and assuming that national rather than regional data are the most appropriate, then for the moment let's assume that plaintiff's forensic economist has used the best data available

How good is this data? This is the focus of the remainder of t his article According to the national statistics used by plaintiff's expert, in 1993 there were 187,000 pharmacists, 6 1% of whom were black. This works out to be 11,407 black pharmacists The same data for the following year though show that there were 182,000 pharmacists in the U S. and only 2 6% of them were black. This suggests instead just 4,732 black pharmacists From one year to the next, the number of black pharmacists in the U S fell by over 6000, an average drop of over 120 per state, a percentage decline of nearly sixty percent. Where did all the black pharmacists go?

This paper is an investigation of this question and this question applied to all the three-digit occupations for which a forensic economist might be seeking national data Such year-to-year variability motivates this paper to inquire as to the source, method, reliability and appropriateness of these statistics for equal employment opportunity litigation and for workforce analyses that are fundamental to company affirmative action plans.

Section II below examines black employment percentages for three-digit occupations, shows that such large changes are not rare and suggests that one source of the fluctuations may be a 1994 change in the government survey instrument The section that follows discusses the standard errors associated with the survey's point estimates and illustrates how these standard errors and their companion confidence intervals are calculated Section IV proposes and executes a test of year-to-year survey comparability and the final part of the paper is a concluding section.

Where Did All the Black Pharmacists Go?

The short answer to this question is that they quite likely were never there. The national data from which the percentage black is derived is sample survey data As such, the percentage black or percentage female are sample statistics not population parameters as the forensic economist whose work is illustrated above has presumed As sample statistics, fluctuation can be expected but should one expect such large fluctuations? In many economic loss estimates forensic economists routinely rely on average wage information by occupation to form the basis of their report Those are sample statistics as well and it would be well to remember this when presenting dollar estimates of economic losses that use sample statistics as a foundation

The large change in the percentage black in the three-digit occupation Pharmacists is far from unique Table 1 shows thirteen three-digit occupations for which the 1994 percentage black is more than fifty percent lower than the 1993 figure The table also lists sixteen occupations where the percentage black in the occupation rose by more than fifty percent between 1993 and 1994 All the occupations listed in Table 1 have total employment

estimates of at least 50,000 [8]

These national statistics are generated from household responses to the monthly Current Population Survey (CPS) This is the same survey that supplies the well-publicized monthly unemployment rate data It also supplies an abundance of other labor force data such as labor force participation rates and earnings by occupation In short, it is likely to be the source of a large variety of statistics that forensic economists rely on in their work in economic loss estimation and in other areas of litigation The CPS is a survey of about 60,000 households per month It employs a stratified multi-stage sampling design Households chosen are surveyed for four consecutive months, then are dropped for eight months, and then return for four months This is called the 4-8-4 rotation Annual data on employment, earnings and many other variables are thus the averages over twelve months Employment by occupation appears in the *Statistical Abstract of the United States* each year for some but not all occupations and in many instances data from several three-digit occupations are accumulated and reported in aggregate form Employment for all three-digit occupations that have at least 50,000 workers are reported each year in the January issue of the Bureau of Labor Statistics publication *Employment and Earnings*

Interestingly, the CPS survey questionnaire was redesigned and the new instrument was put into full use beginning in January 1994 This was the first major change in over a quarter century in the questions and the sequence in which they were asked The changes included changes in questions designed to discover the three-digit occupation into which respondents fall [9]

Improved accuracy is the primary reason for the change. For example, an internal research report now two decades old found that month to month almost one-third of respondents were coded as having changed three-digit occupations Many of these reported changes were false, a result of either coding errors or erroneous interpretations by interviewers of the detailed responses discussing job responsibilities that were supplied by survey participants [10]

[8] Unpublished data obtained from the U S Department of Labor show that among three-digit occupations with employment of less than 50,000 there are dozens of occupations that have 1993-1994 changes in the percentage black of more than fifty percent That data though has black and total employment rounded to the nearest thousand That rounding produced in my opinion too much uncertainty about the survey estimate's percentage black to be useful Consequently, all analyses within this paper are limited to occupations that had employment of at least 50,000 in 1992, 1993, and 1994 Fifty-thousand is the BLS's publication threshold as is discussed below

[9] Before the new instrument was adopted in January 1994, it was tested in 1992 and 1993 See Cohany et al for a detailed discussion of revisions to the CPS

[10] Collins, Candice L , "Comparison of Month-to-Month Changes in Industry and Occupation Codes with Respondents' Reports of Change CPS Job Mobility Study," Response Research Staff Report no 75-5, Bureau of the Census, 1975, cited in Polivka, p 18 Many proposed improvements to the CPS could not be implemented in the 1980s due to funding shortages and a lack of congressional and executive support for those federal agencies that have major data collection responsibilities

Table 1

Three Digit Occupations With Changes in the 1993-1994 Estimates

of Percentage Employment Black of 50% or More

Occ No.	Occupation	Total Empl. 1993 (000)	Percent Black 1993	Total Empl. 1994 (000)	Percent Black 1994	'93-94 Percent Change in Total	'93-94 Pct. Ch. in Black Percent
	Declines — 50% and greater						
9	Purchasing managers	109	8 0	130	1 7	19 3	-78 8
43	Architects	123	3 1	141	1 4	14 6	-54 8
44	Aerospace engineers	83	2 1	75	0 9	-9 6	-57 1
83	Medical scientists	82	5 8	62	1 1	-24 4	-81 0
96	Pharmacists	187	6 1	182	2 6	-2 7	-57 4
104	Speech therapists	83	6 7	92	3 3	10 8	-50 7
187	Actors and directors	96	10 4	86	3 8	-10 4	-63 5
204	Dental hygienists	76	0 4	97	0 2	27 6	-50 0
218	Surveying and mapping techs.	73	4 8	68	1 5	-6 8	-68 8
226	Airplane pilots and navigators	101	5 5	104	1 5	3 0	-72 7
314	Stenographers	94	2 9	105	1 0	11 7	-65 5
514	Auto body and related repairers	192	5 4	186	1 6	-3 1	-70 4
538	Office machine repairers	59	13 5	61	2 4	3 4	-82 2
	Increases — 50% and greater						
7	Financial managers	529	4 4	608	7 0	14 9	59 1
56	Industrial engineers	201	3 4	245	5 9	21 9	73 5
85	Dentists	152	1 9	148	3 7	-2 6	94 7
164	Librarians	195	7 0	196	10 5	0 5	50 0
223	Biological technicians	85	6 1	89	10 4	4 7	70 5
265	Sales workers, shoes	101	14 1	110	21 3	8 9	51 1
268	Sales workers, hardware and bldg.	250	1 8	253	4 8	1 2	166 7
305	Supervisors, financial record proc	98	5 0	97	8 7	-1 0	74 0
317	Hotel clerks	102	8 5	107	14 7	4 9	72 9
383	Bank tellers	446	6 9	441	10 4	-1 1	50 7
386	Statistical clerks	50	15 4	75	23.4	50 0	51.9
414	Supervisors, police and detectives	96	6 6	109	12 3	13 5	86 4
463	Public transportation attendants	104	8 8	104	13 9	0 0	58 0
509	Small engine repairers	70	1 0	52	2 9	-25 7	190 0
577	Electrical power installers & rep'rers	110	7 8	116	13 1	5 5	67 9
694	Water and sewage treat operators	57	6 2	68	16 6	19 3	167 7

source Employment and Earnings, January 1994 and January 1995 List is limited to occupations with employment estimates of at least 50,000

That the new design went into effect in January 1994 raises the question as to whether the large changes in black representation in the occupations listed in Table 1 are merely a consequence of the new survey instrument That is, should one view the 1993 data with suspicion and put more faith in the 1994 CPS estimates of black employment by occupation? In fact, a footnote to the published tables contains that caveat that always distresses time series researchers "Data for 1994 are not directly comparable with data for 1993 and earlier years "[11]

Estimated Standard Errors and Confidence Intervals

I proceed to address this question by investigating the estimated errors associated with the percentage black of a three-digit occupation Curiously, the BLS does not publish confidence intervals for what are clearly important sample statistics Publishing the standard error for the percentage black in the occupation Pharmacist might have alerted the forensic economist whose work is illustrated in Section I that the government data that forms the basis of his report is a sample statistic and not a population parameter

How large are these standard errors? Are they large enough to believe that both the 1993 figure of 6 1 percent black and the 1994 figure of 2 6 percent are drawn from (almost) the same population?[12]

To compute this standard error, it is important to recognize that the estimate "percent black" is a ratio of two sample statistics the number of black pharmacists (numerator) and the number of pharmacists (denominator) Both are annual averages In addition, the CPS does not have a simple random sampling design Consequently, standard errors are estimated using variance decomposition methods.[13]

The estimate of the standard error (S) is computed as,

$$S = a\{bp(1-p)/t\}^{0.5}$$

where p is the percentage black, t is the total pharmacy employment estimate, a is a constant that accounts for the fact that the data is an annual average, and b is a constant produced by the variance decomposition methods Thus, the 1993 black pharmacist percentage estimate of the standard error is,

$$S = 0\ 65\{2613\ 14(6\ 1)(100\text{-}6\ 1)/187{,}000\}^{0.5} \quad \text{or}$$
$$S = 1\ 84\%$$

[11] *Employment and Earnings*, January 1995, p 180

[12] Certainly I recognize that from year to year, there are new entrants and re-entrants into the pharmacy occupation as well as exits for retirement and other reasons Demographics, the business cycle and the pharmacy market itself affect these flows These factors will affect both blacks and nonblacks though My maintained hypothesis is stability from one year to the next in the black employment percentage CPS data show that the black percentage of total employment was 10 2 in 1993 and 10 4 in 1994

[13] See any issue of *Employment and Earnings* for the formula, related tables of constants, and a discussion of estimates of error

Using the 1993 point estimate, the 95% confidence interval is computed as,

$$6.1\% \pm (1.96)(1.84)$$
$$6.1\% \pm 3.61\%$$

or a range from about 2.5 percent to 9.7 percent. Note the size of the confidence interval width. It is larger than the 6.1 percent point estimate. Furthermore, the confidence interval is broad enough to include both the 1994 CPS estimate of 2.6 percent for black representation as well as the XYZDrug Company's percentage black.[14] Finally, this is the case when total employment for the occupation Pharmacist is estimated as being about 3.75 times higher than the minimum threshold of 50,000 that the BLS uses for publication.

Thus the confidence interval is quite large. For another example to drive this point home, consider an occupation with employment of 50,000 and black representation of 10 percent.

[14] The forensic economist with the XYZDrug Company data who first treated the national data as a parameter perhaps now could view the test as one involving a difference between two sample proportions. The samples are not independent ones though, but if viewed this way anyway, the estimated standard error will be larger than 1.84%.

Table 2

1993 Confidence Intervals and 1994 Estimates of

Percentage Black for Selected Three Digit Occupations

Occ No.	Occupation	Percent Black 1993	Estimated Standard Error	Lower Limit	Upper Limit	Percent Black 1994	94 est. within C.I.?
9	Purchasing managers	8 0	2 73	2 65	13 35	1 7	no
43	Architects	3 1	1 64	-0 12	6 32	1 4	yes
44	Aerospace engineers	2 1	1 65	-1 14	5 34	0 9	yes
83	Medical scientists	5 8	2 71	0 48	11 12	1 1	yes
96	Pharmacists	6 1	1 84	2 50	9 70	2 6	yes
104	Speech therapists	6 7	2 88	1 05	12 35	3 3	yes
187	Actors and directors	10 4	3 27	3 98	16 82	3 8	no
204	Dental hygienists	0 4	0 76	-1 09	1 89	0 2	yes
218	Surveying and mapping techs.	4 8	2 63	-0 35	9 95	1 5	yes
226	Airplane pilots and navigators	5 5	2 38	0 83	10 17	1 5	yes
314	Stenographers	2 9	1 82	-0 66	6 46	1 0	yes
514	Auto body and related repairers	5 4	1 71	2 04	8 76	1 6	no
538	Office machine repairers	13 5	4 67	4 34	22 66	2 4	no
7	Financial managers	4 4	0 94	2 56	6 24	7 0	no
56	Industrial engineers	3 4	1 34	0.77	6.03	5 9	yes
85	Dentists	1 9	1 16	-0 38	4 18	3 7	yes
164	Librarians	7 0	1 92	3 24	10 76	10 5	yes
223	Biological technicians	6 1	2 73	0 75	11 45	10 4	yes
265	Sales workers, shoes	14 1	3 64	6 97	21 23	21 3	no
268	Sales workers, hardware and bldg	1 8	0 88	0 07	3 53	4 8	no
305	Supervisors,financial record proc	5 0	2 31	0 47	9 53	8 7	yes
317	Hotel clerks	8 5	2 90	2 81	14.19	14 7	no
383	Bank tellers	6 9	1 26	4 43	9 37	10 4	no
386	Statistical clerks	15 4	5 36	4 89	25 91	23 4	yes
414	Supervisors, police and detectives	6 6	2 66	1 38	11 82	12 3	no
463	Public transportation attendants	8 8	2 92	3 08	14 52	13 9	yes
509	Small engine repairers	1 0	1 25	-1 45	3 45	2 9	yes
577	Electrical power installers & rep'rers	7 8	2 69	2 53	13 07	13 1	no
694	Water and sewage treat operators	6 2	3 36	-0 38	12 78	16 6	no

Ten percent is about the national proportion of black employment In this case with a point

estimate of 10 percent, the estimated standard error is 4 46 percent and a 95 percent confidence interval has lower and upper limits of 1.26 percent and 18 74 percent respectively!

Next, examine the confidence intervals in Table 2 These are for the twenty-nine occupations listed in Table 1. Are the confidence intervals broad enough to encompass the 1994 estimate? Despite the large interval widths, four of the thirteen occupations with decreases in black employment had 1994 point estimates below the lower limit and half of the sixteen showing increases had point estimates above the upper limit

Are the 1993 and 1994 Surveys Comparable?

The occupations in Table 2 are exceptional though by the sizes of their changes in their minority percentage representation Overall, one expects that five percent of all 95% confidence intervals will not capture the population parameter of interest Since that is the expectation, I propose to test for the comparability of the two surveys by asking the following questions

1 Of the 246 three digit occupations with employment over 50,000, how many of the 1993 95 percent confidence intervals do not encompass the 1994 estimate? Is this significantly greater than 5 percent?

2 Of the 246 three digit occupations with employment over 50,000, how many of the 1992 95 percent confidence intervals do not encompass the 1993 estimate? Is this significantly greater than five percent?

Note that the first questions asked involve data from both before and after the CPS survey design change This is the proposed test for comparability The second questions are based on 1992 and 1993 CPS data before the design change This is essentially a check that the expectation is a reasonable one in the absence of design change[15] Note that both questions ask whether the confidence interval in one year captures the following year's estimate Here confidence intervals are used *prospectively*

A second test is to use the data *retrospectively* and ask:

3 How many confidence intervals constructed using the post-change 1994 data do not encompass the 1993 pre-change estimate of the percentage of employment black?[16] Is this significantly greater than five percent?

4 Similarly, when there was no survey change, how many 1993 confidence intervals do not capture the 1992 estimate and is this percentage greater than five percent?

Table 3 reports the results The top half of the table shows the results using the two

[15] That is, the maintained hypothesis of stability is tested here See note 12

[16] The results won't necessarily be the same as those in question 1 because the estimated standard errors and thus the confidence interval widths depend on the point estimates of that year

Table 3

Comparison of Extreme Values for Black Representation

With and Without CPS Revisions

No Survey Change	Number Outside of 1992 C I	Number Outside of 1993 C.I	Percentage Outside (of 246)	test statistic	Significantly Greater than 5% ? (alpha = 05)
1993 Point Estimate	9	------	3 66%	-0 97	NO
1992 Point Estimate	------	10	4 07%	-0 67	NO

Survey Change	Number Outside of 1993 C I	Number Outside of 1994 C I	Percentage Outside (of 246)	test statistic	Significantly Greater than 5% ? (alpha = 05)
1994 Point Estimate	20	------	8 13%	2.23	YES
1993 Point Estimate	------	20	8 13%	2 23	YES

bottom half of the table (questions 1 and 3) shows that from 1993 to 1994 (survey change) though, the movement in the point estimates for the percentage black in three digit occupations is often so large that the hypothesis of survey comparability is rejected

A change in survey design is most often routinely accompanied by a caution of incompatibility with previous years' surveys The evidence presented here in Table 3 is that for minority representation data the caution is warranted and should be taken seriously by forensic economists who participate in litigation or consult with companies about minority workforce targets and goals

Conclusion

Unfortunately for users of this government data the evidence presented above suggests that one cannot ignore the fact that the CPS survey instrument was changed in January 1994 Since it is well-documented that a substantial portion of the pre-1994 movement between occupations by many respondents is spurious, then this suggests that great caution should be taken when making use of the pre-1994 CPS estimates of black employment proportions by three- digit occupation Because better data is often available,black representation rates have limited use in litigation and rightly so, given the evidence here Because of the change in the CPS questionnaire, 1994 estimates have a greater degree of credibility and can be given more weight in litigation and affirmative action than prior surveys

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Policy and Practice in the Equitable Distribution of Defined Benefit Pension Plans

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Introduction

On a daily basis across the U.S., courts are transferring ownership of sizeable volumes of assets to accomplish equitable distributions of marital assets upon dissolutions of marriages. The magnitudes of wealth transfers at issue are substantial and, in the case of many assets, there are significant questions regarding the correct values to be assigned in this process for division purposes. In most marital unions, pension plans are the second-highest-value assets, following homes. In practice, it appears that they are much more difficult to value "fairly" than homes.

In a *defined contribution* pension plan, the pension claimant(s) may be viewed as owning an identifiable dedicated portfolio of securities. Since pension assets are thus ones whose market values are set daily in financial markets, *defined contribution* pension plans are easily valued (and not a matter of concern in this paper). The accurate valuation of *defined benefit* plans, however, may be far from straightforward and can require complex economic analysis involving forecasting, discounting, risk analysis, and a subjective weighing of tradeoffs that ex-spouses face. While courts are busily applying their versions of economic analysis to the valuation of defined benefit pension plans (hereafter DBP plans), there has been a dearth of academic illumination and analysis of the appropriateness of court-developed regulation of the divisions of wealth taking place.

This paper attempts to bring DBP plan valuation into the arena of academic discussion. It does so by focusing primarily on what appears to be the most troubling aspect of court valuation procedures, the failure of courts to properly and consistently deal with passive escalations of defined benefit pensions, while also raising related issues. Of course, the mechanics of the application of time-value-of-money calculations to future (pension-benefit) cash flows are familiar to a wide range of participants in valuation activities and have much in common no matter what the specific setting calling for a valuation. Valuations of DBP plans for equitable distribution purposes are distinctive, however, in the imposition of a specific cutoff date for determining the *marital* portion of **earned** prospective benefits that, generally, is prior to any actual retirement. The imposition of this cutoff introduces an additional degree of complexity and uncertainty into the pension valuation process and opens the door for troublesome court rulings. It is not clear that the complications in DBP valuation are universally understood by the experts who are involved in pension-valuation settings. On the other hand, an abundance of actual decisions makes it clear that courts have not addressed the valuation of defined-benefit pensions in a consistent manner, and this fact strongly

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indicates a lack of understanding of the requirements for accurate valuation of such pension plans.

Since the valuation difficulties that plague equitable-distribution court actions are particular to DBP plans, Section II of this paper discusses these plans, illuminating assumptions that can be (and often are) made as to future benefits. In Section III, statutory and common law valuation decisions are examined, and the wide variation in treatment across a geographically dispersed sample of states is illustrated. Section IV discusses some possible court rules and/or modifications of divorce statutes that would reduce the incentives to engage in post-divorce opportunism and litigation.

Defined Benefit Plans and the Value Available for Distribution

A *DBP* plan provides formula-prescribed pension benefit payments. The relevant formula typically includes as variables the highest experienced levels of earnings, numbers of years of service, and related factors. Proper calculation of the *correct* (present) value of such a retirement plan is viewed by courts as an exercise in applying a correct discount rate to future benefits over a time interval to completion of life expectancy. Properly determining the requisite pension plan present value at a date dictated by marital separation is actually a difficult and uncertain task and remains so in spite of the acceptance by courts of prescribed mechanical methods for valuing such plans.[1]

The nature of the issues and sources of confusion courts face are the same, no matter whether there is a single earner/pension-plan owner in a family unit, or whether both spouses have pension plans. Hence, lessons drawn from an analysis applied to a family setting in which there is one working spouse (H), vested in a retirement program provided by the employer, and one nonworking spouse (W), with no such pension coverage, are directly applicable to dual pension settings.[2]

Of course, to know with *certainty* the lump-sum value of the future benefits from a DBP plan (i.e., its *present value*) to H, the employee spouse, as of a prescribed valuation date, it is necessary to know *precisely* a date of retirement, the time interval subsequent to retirement over which benefits will be drawn (the date of retirement to the date of death), the amounts of periodic benefits to be received, and the rate(s) of return that correctly link a sum set aside at the valuation date with the future series of payments that must be provided by that sum. It is commonly understood that the valuation environment is not one in which *certain* information on these variables is available, and courts readily accept estimated values based on "expected" retirement dates or court-mandated rules in that regard, "average" life-expectancy measures, and currently available interest-yield measures.Courts seem routinely to accept U.S. Vital Statistics measures of life expectancies, along with yields on governments and/or PBGC multiples employed for discounting.[3]

[1] These distinctions and other aspects of pension evaluation methodology have previously been discussed by Frasca (1990), and by Trout (1988).

[2] If one spouse is employed and one not, the employed spouse is generally male. The analysis presented below is equally applicable for households that have nonemployed house-husbands.

[3] Courts seem routinely to accept U.S. Vital Statistics measures of life expectancies, along with yields on governments and/or PBGC multiples employed for discounting.

The Value of Future Defined Benefit Pension Payouts

As described above, for a DBP plan, there typically is a formula that indicates a level of prospective benefits, based upon formula entries including earnings levels and service years. In simple algebraic form, the annual benefit payment (B) available at retirement typically may be viewed as equal to the product of average highest pay rates (P) for a prescribed period (such as five years preceding retirement), the number of years of employment (N), and a formula multiplier factor (F).[4] Using these factors, an initial annual benefit may be calculated as

$$B = F \times P \times N. \tag{1}$$

If, for example, F equals 2 percent, P is $50,000, and N is 30, then B equals $30,000. Recognizing that mortality risks (proxied by expectancy value, (e)), differences of opinion regarding future yields on invested funds (r), and other complications introduce uncertainties in determining exactly the present value of a future retirement-benefits stream for any one pension recipient, courts generally recognize the necessity of *estimating* the present value of such a prospective benefits stream. That present value for the benefit level above is

$$PV_B = \sum_{t=i}^{e} B_t / (1 + r_t)^t, \tag{2}$$

the summation of discounted future benefits from the first expected (or court-mandated) retirement month (i being the number of periods to the initial retirement payment) to the last expected survival period (t = e) prescribed by life-expectancy data.

Although, for equitable-distribution purposes, P and N are fixed once a valuation date is set, adjustments (most often cost-of-living or COLA adjustments) are commonly made to DBP plan benefit levels subsequent to that date. The implication of these adjustments is that equation 1 might better be written as

$$B^* = f(F \times B \times N) \tag{3}$$

where f is a multiple that incorporates passive[5] adjustments in benefit levels after the prescribed valuation date. If there is compelling evidence that no post-valuation-date adjustments will be made to benefits during the pensioner's life expectancy, then f equals 1, and the values provided by correct application of equation 2 are suitable present values for the equitable division of DBP plans. The empirical evidence presented below, however, makes it clear that, on average, f has been greater than 1 by a considerable margin. Where there is information relevant to a DBP plan, expert testimony may provide assistance to finders of fact (judges or juries) about the need for a forecast of benefit adjustments (a value of f other than

[4] In practice, of course, pension benefits are disbursed monthly.

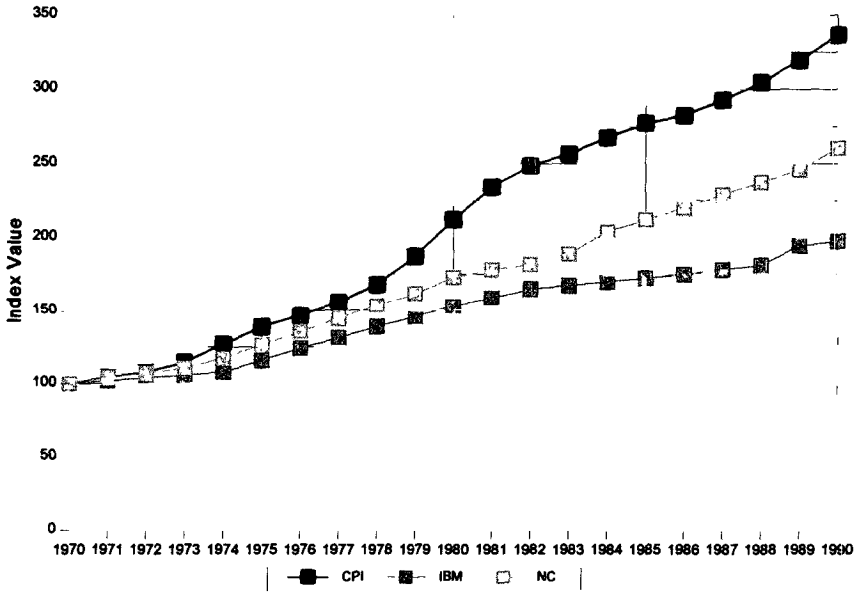
[5] In asset valuations in ED cases, courts distinguish between "active" appreciation, an increase in value *earned* by the efforts of one or both spouses, and "passive" appreciation, value adjustments that are *not earned* by such efforts. Here we are concerned with benefit escalations that are not the result of post-marital efforts of a spouse but which are passive adjustments applied to benefit rights that were earned during a period of marriage.

1). Of course, there can be other issues regarding the value of the marital portion of defined DBP plans, such as those resulting from recognition that service years may add to the value of the pension in a nonlinear manner (see Frasca, 1990). The focus of this paper, however, is on courts' handling of passive escalations in pension benefits and the results of choices courts have frequently made.

Evaluation Choices: Informed Judgment or Conjecture

Table 1 and Figure 1 below illuminate the actual recent historical record of adjustments in benefit payments to retired employees of IBM, as an example of corporate pensions, and to employees of the State of North Carolina, as an example of government

Figure 1
Indices, CPI, & Retirement Benefits



pensions. As only retirees receive(d) the benefit adjustments illustrated, the implied benefit (multiplier, or 'f') adjustments reflected are purely *passive*.

Table 1

Index Values, CPI and Selected Retiree Benefits

Year	CPI Index Value	IBM Index Value	State of NC Index Value
1970	100.0	100.0	100.0
1971	104.4	101.9	104.0
1972	107.7	103.9	107.1
1973	114.4	105.9	110.8
1974	127.0	107.9	117.4
1975	138.6	115.7	126.8
1976	146.6	124.1	135.7
1977	156.1	131.3	144.4
1978	168.0	139.0	153.9
1979	187.0	145.8	161.9
1980	212.2	152.9	172.9
1981	234.1	158.9	178.1
1982	248.6	165.1	181.6
1983	256.5	167.6	188.9
1984	267.6	170.0	204.0
1985	277.2	172.5	212.2
1986	282.5	175.0	220.2
1987	292.7	178.0	229.1
1988	304.6	181.1	237.3
1989	319.3	194.2	245.6
1990	336.5	197.3	260.6

Soureces: International Business Machines, Inc. (1994)
North Carolina State Government Teachers' and State

For State of North Carolina employee retirees, from 1970 to 1990 yearly adjustments ranged from 2 percent to 8 percent, averaging a bit under 5 percent yearly, compounding to a 100 percent increase in benefits over 15 years. In no year was the increase zero in these most recent two completed decades of experience. For IBM retirees, the adjustments were more

sporadic and averaged less than for State retirees. Nevertheless, they exceeded zero on average by a wide margin and are historically consistent with the expectation of future increases.

While an effort to project likely future passive increases in pension benefits for a particular recipient must pay heed to the history of such increases provided by the recipient's employer, national survey data indicate that the necessity of considering such increases is widespread. In the 1970s, a large proportion of plans provided escalations of retirement benefits. From 1973 to 1979, mean benefit levels among all plans are reported to have risen by 24 percent while, for those plans that provided some increase(s), the escalation was 32 percent (see Allen, et al., 1986).

Benefit escalations were reduced in the 1980s but were still a necessary consideration in pension valuations. From 1980 to 1984, mean benefits rose 8 percent across all plans, and by 20 percent among plans that provided some increase(s). From 1984 to 1988, the respective percentage increases were 2 percent and 9 percent. In the 1980-1984 time interval, 41 percent of participants were in plans experiencing an increase while, in the 1984-1988 time span, 22 percent were. (Allen, et al., 1992).

Impact of Ignoring Future Changes in Defined Benefit Payments

With this sample of historical record as a backdrop, consider a case-specific illustration of the impact of assumptions courts apply to future benefit escalations. In the *Bishop* case the parties separated when the employee/spouse was 48.[6] The court determined at date of separation that Harry Bishop, an employee of the DuPont Corporation, had a life expectancy of 30 years and that the appropriate discount rate was 7.5 percent. Age 50 was the earliest possible retirement date for Mr. Bishop, at which time he was entitled to pension payments of $120 monthly ($1,440 annually). Using the figures above for e and r, and with no allowance for benefit escalation (assuming f is 1.0), the present value of the Bishop pension at date of separation was computed as $15,908.[7] Data on an extended history of adjustments in defined pension benefits at DuPont were not made available (though we are aware of a 1996 adjustment of benefits for active DuPont retirees; (see Krol, [1996]). If, however, Harry Bishop's DuPont pension had been adjusted as though he had worked for the State of North Carolina during the 1970 to 1990 period, the present value of the pension would have been $25,908, a 62 percent difference (keeping e and r constant). Were it adjusted in a fashion that parallels that of IBM employees, the differences would be less dramatic, but still non-zero. A seemingly endless stream of other reported cases, a few of which are discussed below, have similar consequences associated with a court-endorsed assumption that f is 1.0 (see Baumer and Poindexter, [1996]).

LEGISLATIVE INTENT

[6] Bishop v. Bishop, 440 S.E.2d 591 (N.C.Ct.App. 1994).

[7] *Id.* at 594. The authors have independently verified the computations.

A complete review of statutes from throughout the U.S. indicates common legislative focus on equity in addressing the determination of pension asset values and their distribution.[8] In the absence of serious marital misconduct or other unusual circumstances, equity generally means *equal* division of marital property.[9] It is commonplace for statutes to call for inclusion in *marital property of all vested pension, retirement, and other deferred compensation rights.*[10] Virtually all statutes allow for an award of shares of the present value of a defined benefit pension with the nonemployee spouse to be paid with either an immediate lump sum distribution or with disbursements over a prescribed time interval by means of a prorated portion of the future benefits stream when those benefits are received. If, for a DPB plan, the nonemployee spouse receives an immediate lump sum (often called an *immediate offset*), that spouse, in return for renouncing his/her interest in the pension of the employee spouse, receives other assets supposedly equal in value to the present value of the interest given up in the pension plan.

Houses and other Nonpension Property versus Pensions

It often is convenient for male employee spouses to give up their equity in the family house in return for clear title to the pension associated with their job. *In such cases where marital property is exchanged in an immediate offset, the nonemployee spouse will be undercompensated if the pension of the employee spouse is undervalued as a consequence of an inappropriate assumption of zero benefit escalation (an f equal to 1.0).* If the defined benefit is undervalued, of course, then the amount of equity in other assets that the employee spouse must relinquish in order to gain unencumbered rights to a DBP plan is correspondingly less (barring convenient offsetting errors in valuing other assets). Consider a dissolving family for which the employee spouse's pension plan is valued at $100,000 when in fact it has a present value of $150,000 (each value net of sales expenses). If the couple's equity in a house has a *correctly* appraised value of $100,000, then the courts may order an equal exchange, even though under equitable distribution and community property statutes, the nonemployee spouse may be viewed as entitled to all of the equity in the house plus $25,000 in return for giving up her interest in her former husband's pension. Valuation assymmetries like this are commonplace, and the reason is clear; houses are regularly traded and their

[8] See for example, N.C. GEN. STAT. s 50-20(a), "Upon application of a party, the court shall determine what is the marital property and shall provide for an equitable distribution of the marital property between the parties in accordance with the provisions of this section."

[9] In White v. White, 312 N.C. 770, 324 S.E.2d 829 (1985), "equal division mandatory unless the trial court determines that equal is not equitable." The authors have reviewed the statutes of all 50 states as well as hundreds of reported cases in connection with their law review article [Baumer, D. L., and Poindexter, J.C., "Women and Divorce. The Perils of Pension Division," *Ohio State Law Journal,* Vol. 57 (1) 1996: 203-233] and have not located a single state in which equitable did not mean equal absent serious misconduct by one spouse or other compensatory consideration.

[10] Some states allow for the capture of nonvested claims in pensions, but most, including North Carolina, do not. "The exception of nonvested pension, retirement, or other deferred compensation rights shall be considered separate property." N.C. GEN. STAT. s 50-20(b)(1). In Pennsylvania, marital property includes, "Retirement pension benefits, subject to equitable distribution." Berrington v. Berrington, 409 Pa.Super. 355, 598 A.2d 31 (1991). 23 Pa.C.S.A. s 3501(a)

"current" prices reflect future benefits of ownership including possible future appreciation, whereas defined benefit pensions are not legally tradeable and, with no transactions data available, have their values set administratively in courts. By not factoring in "appreciation" in defined benefits as market transactors would, the administrative values set by the courts will be too low.

The Cost and Benefits of Waiting

Where marital assets are insufficient to allow for an immediate offset, nonemployee spouses often (with court blessing) have to wait for a *deferred* fixed-percentage *distribution* share of the pension benefits when actually disbursed to the employee spouse.[11] A major problem with deferred fixed-percentage distributions is that the financial affairs of the former spouses remain entangled. In some cases certain elections by the employee spouse, such as survivorship benefits, can affect the size of the pension benefit, while in other plans the mortality of the employee spouse can affect the benefit. Also by waiting for a percentage of the pension benefit, the nonemployee spouse bears the risk of default by a former spouse's employer. So, a significant number of risks may be avoided by an immediate offset. *A cost to the non-employee spoust of avoiding these risks and inconveniences under the most frequently applied court standards is the forfeiture of the spouse's share of the value of any passive escalations of pension benefits.*

If permitted to choose whether to take an immediate offset distribution, a rational nonemployee spouse would compare the value of anticipated appreciation in pension benefits to the value of the inconveniences and risks avoided. If expected appreciation of defined benefits on the marital portion of the pension is modest, then avoidance of the disadvantages of waiting would make an immediate offset the preferred choice. On the other hand, when pension appreciation is expected to be significant, immediate offsets are likely to prejudice seriously the nonemployee spouse and are less likely to be a choice voluntarily taken.

A Case Where the Differences Are Significant

In the *Seifert* case, nonpension marital property totaled $85,759.87, and Mr. Seifert's pension was assigned by the court a present value of $108,491.60, assuming no benefit escalation.[12] This case is particularly interesting because the judge listed costs and benefits of immediate offsets versus deferred fixed percentages of the pension benefits when actually disbursed. The court noted that an *advantage* of the deferred fixed percentages was the capture of any appreciation of the pension benefits, though this advantage carried with it the risks of pension default plus continued financial entanglement with a former spouse. With an immediate offset, however, there would be no capture of pension escalations. In her ruling in this case, the judge sanctioned disparate treatment of those who are willing to wait for a percentage of the pension benefits disbursements (and thus capture possible pension

[11] In an immediate offset, the nonemployee spouse takes nonpension property as an offset in return for giving up rights to the pension benefits. In some states, such as Texas, immediate offsets are required unless marital assets are insufficient, whereas in other states, such as North Carolina, there is no statutory preference for immediate offsets. Berry v. Berry, 647 S.W. 2d 945 (Tex. 1983); N.C. GEN. STAT. s 50-20(b)(3).

[12] Seifert v. Seifert, 346 S.E. 2d 504 (N.C. Ct. App. 1986).

appreciation) and those who desire an immediate offset by setting a pension plan value that excluded any allowance for benefit escalation.

At the valuation date, Paul Seifert had a life expectancy of 25.5 years according to the court. If we assume for illustrative purposes that, during that period, Seifert's pension benefits would escalate 50 percent to adjust for inflation, the correct present value of the pension would be about $163,000. After adjusting for the coverture fraction and the nonpension property, Margie Seifert would have been entitled to $90,000 or so with the immediate offset election, while she would realize pension disbursements with a present value of $114,000 if she elected the deferred fixed-percentage method.[13] Of course, in the case of higher paid executives, retired from employers who parallel many government units in their benefit escalations, the consequences of immediate offsets could be even far more dramatic. The large volume of appeals of pension valuations indicates that, even for run-of-the-mill pensions, existing valuation procedures often result in perceived undervaluations that merit added litigation, even if the escalations excluded are only fractional portions of full cost-of-living adjustments.

Why Women in Particular Are Complaining

If, when one spouse works and the other does not, the employee spouse most often is male, it would not be surprising if most appellants of defined benefit immediate offsets were women. In fact, in nearly all of the reported cases involving DBP plans the parties appealing the insufficiency of immediate offsets are female, nonemployee spouses (as in both *Bishop* and *Seifert*) (see Baumer and Poindexter, 1996 for numerous examples). Under current rules the employee (generally male) spouse typically cannot receive less than 50 percent of the marital portion of pensions while having a good chance of receiving considerably more than 50 percent with immediate offsets.

Disparities Across the U.S.

There often are requirements, either statutory or in common law decisions, that the vested accrued benefit be calculated at a date certain. There is, however, a great deal of variation in the date prescribed (alternates include date of separation (DOS), date of divorce or dissolution (DOD), date of trial (DOT) and date of retirement (DOR)) (see Table 2). There often are statutory prescriptions on what adjustments may or may not be made in projected pension benefits to that date and, indeed, after that date.[14] Many states' *statutes* explicitly allow for the *anticipation* of future, fully passive adjustments (gains or losses) in the benefits

[13] In order to make these computations it is necessary to adjust for the coverture fraction, which is the ratio of time of job incumbency *during* marriage to total job incumbency with the pension-providing employer(s). In *Seifert* that ratio was .875. The result in this simple illustration is obtained by multiplying the coverture fraction times the uninflated pension, adding the nonpension marital property and dividing the figure by two, yielding $90,344.91 ((.875 x 108,491.60 + 85,759.67)/2). If the pension actually has a present value 50 percent higher due to COLA adjustments, the result is $114,077.44 ((.874 x 162,737.40 + 85,759.67)/2).

[14] According to N.C. GEN. STAT. 50-20, "The award shall be based on the vested accrued benefit, as provided by the plan or fund, calculated as of the date of separation, and shall not include contributions, years of service or compensation which may accrue after the date of separation."

vested at the valuation date and include language that supports such adjustments.[15] Statutes, but more generally court decisions, may explicitly exclude evidence of cost of living or other adjustments as being too speculative.

TABLE 2
State Comparison of Divorce Statutes:
Classification, Valuation Date, Capture of Appreciation, and Statute Number

State	Classification	Valuation Date	Post Divorce Appreciation	Statute Number
1 Alabama	Alimony		No	$30-2-51
2 Alaska	ED	DOT or DOS	No	$25.24.160
3 Arizona	CP	DOR	No	$25-318
4 Arkansas	ED	DOD	Yes	$9-12-315
5 California	CP	Variable	Yes	$2610
6 Colorado	ED	DOD	No	$14-10-113
7 Connecticut	Alimony	DOD	No	$46B-81
8 Delaware	Alimony		No	Ch. 13 $1513
9 Florida	ED+Alimony	Variable	No	Ch. 61.075
10 Georgia	Alimony		No	$19-5-13
11 Hawaii	Alimony	DOD	No	$580-47
12 Idaho	CP	DOD	Yes	$32-712
13 Illinois	ED+Alimony	DOT	No	Ch. 750 $5/510
14 Indiana	ED	DOD	Yes	$31-1-11.5-11
15 Iowa	D+ Alimony	DOD	No	Ch.598.21
16 Kansas	Alimony		No	$60-1610
17 Kentucky	Alimony	DOD	No	$403.190
18 Louisiana	CP	DOR	Yes	C.C. Art. 2356
19 Maine	ED+Alimony		No	Ch. 19.722A
20 Maryland	ED	DOD	No	FL $8-201
21 Massachusetts	Alimony		No	Ch. 208 $34
22 Michigan	Alimony	Variable	No	$552.23
23 Minnesota	ED+Alimony	DOT	No	$518.54
24 Mississippi	Alimony		No	$93-5-23
25 Missouri	ED+Alimony	DOT	No	$452.330
26 Montana	ED	DOD	No	Title 404.202
27 N. Dakota	ED		Yes	$14-05-24
28 Nebraska	Alimony		No	$42.366
29 Nevada	CP+Alimony	Variable	No	$125.150
30 New Hamp	ED+ Alimony		No	$458:16a
31 New Jersey	ED	DOD	No	Ch 2A:34-23
32 New Mexico	CP	DOR	Yes	$40-3-9
33 New York	ED	Variable	Yes	FL 14 $236

[15] In *Berrington* the court, citing the applicable Equitable Distribution statute stated, "but where the plan has vested and value increased, aside from contributions made by employer and employee, after date of separation, the increase in value after date of separation, which is not attributed to additional contributions, is marital property. 23 Pa.C.S.A s 3501(a)." Berrington v. Berrington, 409 Pa.Super. 355, 598 A.2d 31 (1991).

TABLE 2 (Cont)
State Comparison of Divorce Statutes:
Classification, Valuation Date, Capture of Appreciation, and Statute Number

State	Classification	Valuation Date	Post Divorce Appreciation	Statute Number
34 North Carol	ED+Alimony	DOS	No	$50-20
35 Ohio	ED+Alimony	DOD	No	$3105.18
36 Oklahoma	ED	DOD	No	Title 43 $121
37 Oregon	CP+Alimony		Yes	$107.105
38 Pennsylvania	ED	DOS	Yes	23 Pa. $3501
39 Rhode Island	ED+Alimony	DOT	No	$15-5-16.1
40 South Carol	ED+Alimony	DOR	No	$20-7-472
41 South Dakota	ED	DOT	No	$25-4-44
42 Tennessee	ED+Alimony	DOD	No	$36-4-121
43 Texas	CP	DOD	No	$3.63
44 Utah	ED+Alimony	DOD	No	$30-3-5
45 Vermont	ED	DOT	No	Title 15 $751
46 Virginia	ED+Alimony	DOT	Yes	$20-107.3
47 Washington	CP	DOR	Yes	$26.16.030
48 W. Virginia	ED+Alimony	DOT	No	$48-2-32
49 Wisconsin	ED	DOD	Yes	$767.255
50 Wyoming	ED+Alimony	DOD	No	$20-2-114

ED and CP stand for equitable distribution and community property, respectively.
DOT, DOS, DOR, DOD stand for date of trial, separation, retirement, and divorce or dissolution, respectively. $ is used to designate section number.
Source: Baumer, D.L. and Poindexter, J.C., "Women and Divorce: The Perils of Pension Division." 57(1) *Ohio State Law Journal* 203 (1996).

Sampling the Law -- Statutes and Cases

A geographically dispersed sample of statutes and appellate court opinions from throughout the U.S. reveals a great variety of positions on apparent legislative intent and judicial interpretation in the handling of pensions as marital assets, both between states and within them. What is considered fair and equitable in one state or one case is often unfair and inequitable in another, and, indeed, there is a good deal of randomness in decisions by courts within a single state.

In Texas, pensions must be valued at the date of divorce (DOD). In *Berry v. Berry*[16] a Texas court noted that a nonemployee spouse may be entitled to a fixed percentage of the employee spouse's pension *when collected* but only if that spouse's other assets are insufficient to provide an immediate offset at DOD. When these assets are sufficient, the employee spouse is entitled to retain the entire pension while the nonemployee spouse receives an offsetting amount of property purportedly equal to the present value of the *future defined benefits at DOD*. In *Berry*, the court indicated that in calculating the present value

[16] *Berry v. Berry*, 647 S.W.2d 945 (Tex. 1983).

of future defined retirement benefits at DOD, those benefits streams were to be **frozen** at the DOD values, ignoring even highly probable increases in future benefits.[17]

In contrast, in California (and several other states), the courts have adopted a different view. In the *Crook* case, the California court held that, although the nonemployee spouse is not entitled to share in any appreciation of pension benefits due to "increased age, longer service, and higher salary,... the nonemployee spouse *is* entitled to share in any increase in pension benefits attributable to passive increases such as automatic cost-of-living adjustment."[18]

Adding to the diversity of views, in New Jersey the decision of a trial-court judge to take account of the effect of inflation on pension benefits was ruled reversible error.[19] The Superior Court in New Jersey held that the nonemployee spouse's interest in a pension at the date of divorce should be computed without considering the possible effects of inflation on benefits to be received by the employee spouse at retirement (a mandate that was not offset by any adjustment of discount rates to remove an inflation-adjusted yield component). This appellate court decision in New Jersey is exactly the opposite of the *Crook* ruling in California!

The list of cases with inconsistent rulings regarding the valuation of pensions in divorce could be extended considerably. Our illustrative samples, however, will end with an examination of two recent cases in Pennsylvania. In *Zollars*, the defendant husband's expert estimated the present value of the husband's pension at $54,825.60, assuming zero future cost-of-living adjustments.[20] Both the trial court and Superior Court in Pennsylvania agreed with the estimate of the plaintiff's expert, that the present value of the pension was $176,000, incorporating semi-annual cost of living adjustments in benefits. Later in *Berrington*, another Pennsylvania case, the issue of appreciation of pension benefits after DOS was addressed again, with the Pennsylvania court apparently reversing itself?[21] In this case, the nonemployee spouse rejected an immediate offset because she believed (probably correctly) that she would receive **greater (present) value** with a deferred distribution, which would allow her to capture her share of future appreciation. The Superior Court in *Berrington* reversed the trial court's decision with a confused directive that, "[T]he marital property calculation **[must]** yield the same pension benefits under either method of distribution." [emphasis added][22] Of course, since future appreciation was **not** allowed in the immediate offset but would be recoverable in a deferred percentage distribution, the two methods generally can not yield the same

[17] See Brown, S., "An Interdisciplinary Analysis of the Division of Pension Benefits in Divorce and Post-Judgment Partition Actions: Cures for the Inequities in *Berry v Berry*" 39(4) *Baylor Law Review* 1131 (Fall 1978).

[18] In re Crook, 3 Cal.Rept.2d 905, 2 Cal.App.4th 1606 (1992).

[19] DiPietro v. DiPietro, 193 N.J.Sup.Ct. 533, 475 A.2d 82 (A.D. 1984).

[20] Zollars v. Zollars, 397 Pa. Super. 204, 579 A.2d 31 (1991).

[21] Berrington v. Berrington, 409 Pa.Super. 355, 598 A.2d 31 (1991)

[22] *Id* at 367.

amounts, adjusted to present value. Moreover, this is a result in a state that, in a previous decision, appeared to comprehend fully the nuances of DBP plans.

Creation of Perverse Incentives

A sample of several hundred recent cases dealing with valuations of assets in divorce reveals clearly that valuation of DBP plans is the most litigated valuation issue by far and that virtually all of the appellants are female, nonemployee spouses.[23] It is clear that, with great confidence, male employee spouses can generally expect to collect at least 50 percent of the true value of the DBP. Even so, when expected benefit escalation in a DBP plan is modest, it generally may be in the interest of a nonemployee spouse to renounce a claim on the pension in return for an immediate offset that at least reflects the present value of the DBP plan with zero benefit escalation. This presumption, of course, reflects the fact that immediate offsets avoid certain pension risks for the nonemployee spouse, including opportunistic behavior by the employee spouse, which may overwhelm a claim to possible future appreciation. However, when expected appreciation on the DBP plan is relatively large, it is more likely that nonemployee spouses will resist an immediate offset (and continue litigation) if courts persist in assuming away benefit escalations.

"Solutions"

Unless current and future workers (implicitly) contract to take the deferred part of their compensation in payments that are fixed in nominal terms for life, the need for more consistent and satisfactory methods of DBP plan valuation will remain a public-policy imperative. Of course, a start in this direction is mere recognition on the part of courts that, in economic processes, a zero rate of change enjoys no special status (is not necessarily any more "speculative" and/or "conjectural") in relation to other rates of change. In fact, with some employers explicitly committed to COLA adjustments in benefits to active retirees (including numerous federal and state government units), a uniform assumption of zero escalation appears worse than conjectural.

Careful consideration of evidence bearing on the prospects for benefit escalations should be a norm for courts. Just as courts expect to hear expert testimony on the values of discount rates and life expectancies, they should expect to hear expert testimony on the likelihood of benefit escalations and the corresponding impact on the (present) values of future expected benefits. If litigants perceive that accurate values of DBP plans are provided in and relied upon by courts, their inclination to appeal distributive decisions should be markedly reduced. As between immediate offsets and deferred distributions, *equivalent* calculated values would leave litigants with preferred outcomes, as opposed to indifference, based on their own weighing of perceived risks of deferred distributions and values of disentanglement. With immediate offset elections eliminating pension risks and post-divorce opportunistic behavior as an option, accurately (present) valued immediate offsets would almost always be preferred by nonemployee spouses to deferred fixed-percentage distributions. Therefore, asset distributions based on such values should reduce the volume of nonemployee-spouse appeals/continuation litigation. Of course, with such values as a

[23] See Baumer and Poindexter (1996) for a more complete case analysis.

starting point, courts could provide some explicit adjustment amount for the value of disentanglement and risk avoidance (implying some degree of overvaluation from a personal perspective), recognizing that any such adjustment will be a target for challenge.

To the extent that more efficient court procedures reduce litigation and the need for judicial supervision after divorce, social savings will be a welcome result, along with more *equity* in equitable distributions. Of course, it is possible that any reduction in nonemployee spouse appeals would be replaced by appeals by dissatisfied employee spouses. Consequently, more than just better information in courts may be needed to assure equity and social savings through reduced litigation.

A Woman's (Nonemployee Spouses'?) Choice Suggestion

While many schemes may be possible, and other analysts may well have more compelling methods for propelling litigants to agreement in DBP valuations, we offer one simple extension of court procedures in pursuit of this goal. In the atmosphere of antagonism that often exists in divorce settings, the litigants may well be unwilling to reveal voluntarily the "true" values they place on the elimination of contractual entanglement and pension-related risks.

Perhaps the employee spouse should be required to provide a "buyout price" in the form of an immediate offset offer that is to be calculated at least equal to the present value of the DBP with no benefit escalations. Such a figure may be attested to and defended by both parties' experts where used. The nonemployee spouse would then be allowed to elect either the immediate-offset proposal or a deferred fixed percentage of the DBP distribution. If the employee spouse values cessation of financial entanglement and acrimony (s)he may be induced to forestall court interventions (avoiding costly litigation) by offering somewhat more than the present value of the DBP plan without escalations. Of course, the closer the offer price is to a present value that captures reasonably expected benefit escalation, the greater is the likelihood of acceptance by the nonemployee spouse. At the same time, avoidance of pension default risk, financial entanglement and post-divorce opportunistic behavior should induce a well-informed nonemployee spouse to accept significantly less than a **fully** COLA-adjusted offer.

Just as buy-sell agreements are expected to have favorable efficiency consequences in the event of the breakup of a closely held commercial partnership,[24] the structured transaction process suggested above may be expected to improve both equity and efficiency in DBP plan divisions. Transactions may be expected at values that more accurately reflect risk-adjusted ("market-like") values, with far less (appeal) litigation resulting.

Conclusions

With most state statutes either permitting or suggesting that DBP plan valuations pay heed to likely escalations of pension benefits, while most (but not all) court rulings have disallowed such considerations, it appears to be imperative for economic experts to be thoroughly familiar with the legal precedents in their states when valuing defined-benefit

[24] In a buy-sell arrangement one disgruntled partner is required to state a price, while the other has the option of electing to "buy" or "sell". This arrangement provides a remedy for unrealistic statements of value in an asset (the closely held corporation) that is not traded in organized markets.

pension plans in divorce cases. In many jurisdictions, it appears that experts should be prepared to provide values of pensions, both based on benefit levels frozen at a prescribed valuation date and at escalated levels consistent with company history and other relevant information. In states where the present values of pension benefits are frozen at DOS or DOD, valuation experts should advise attorneys and clients that the immediate offset method may yield less to nonemployee spouses than taking a fixed percentage of the retirement benefits and should be prepared to quantify and defend the calculation of the differential. Of course, risks of actual collectability of a future pension stream and the burdens of continued ties to an ex-spouse must be considered when making any immediate-offset-versus-deferred-share choice.

The disparity in pension-plan values resulting from current court practices appears to leave a large proportion of pension-share claimants (those who do not retain a share in the plan) convinced that they are undercompensated. This violates the intent of equitable-distribution laws, clogs appeals-court dockets with valuation claims, and promotes the pursuit of pension-disbursement-sharing agreements that maintain long-term financial entanglement of parties who, in all likelihood, would prefer to avoid such ties.

The first and most immediately needed step toward equity and efficiency improvements is simple recognitions of the probabilities and magnitudes of prospective benefit escalations, for, if a zero escalation is less likely than a non-zero value, a mandated assumption of no escalation forces actual speculation and conjecture to be imbedded in the core of the plan valuation procedure. Changes in valuation/negotiation/litigation procedures to require consideration of benefit escalations and to allow more choice (voluntarism) into the system should result in the elimination of unneeded litigation and prolongation of acrimony by former spouses, while also producing equity outcomes more in line with state objectives. Simple offer/choice systems might be able to accomplish these goals.

Unfortunately, convincing judges and legislatures of the need for change in this area is a daunting task. The issue itself is relatively complex and perhaps not as appealing to the electorate as "fighting crime" or promoting "family values." Although most of the equitable-distribution and community-property state divorce statutes are broad (or ambiguous) enough to accommodate the allowance or nonallowance of likely appreciation in DBP plans in immediate offset values, precedents have been established in this area that may be difficult to reverse. Happily, the magnitude of valuation errors from omission of benefit escalations is likely to be lower for divorcees in the 1990s than they were in the last three decades of equitable-distribution asset divisions, as more companies are switching from defined-benefit to defined-contribution forms of retirement plans and as, with a slowing of inflation, the application of COLA adjustments are less prevalent. However, a diminished magnitude of the problem is not eradication, and the number of potential victims remains in the hundreds of thousands if not millions. Rarely do economists have an opportunity to correct a problem that affects the welfare of so large a group so immediately.

Appendix

A Crystal Clear Scenario

Simply for the purpose of maximum clarity, suppose that a divorcing pension-plan owner actually stops working at the date designated by a court for pension-plan valuation. In this case, any pension-plan rule-change, subsequent to this simultaneous quit/valuation and

continuing through the life of the pension-plan owner, certainly cannot be attributed to post-marital efforts of the pension-plan owner. In this scenario, it is clear that with a "predicted" change in the benefit formula, an accurately appraised present monetary value of the projected escalated benefits changes in step, from the original value B to the enhanced value fxB. Both spouses have an equitable claim on the additional pension **value** [(f-1)×PV_B] provided by any such *passive* escalation in benefits. Likewise, if the pension plan owner continues employment, but receives benefit enhancements (on the marital portion of pension benefits) that would have been applied either with employment continuation or with retirement, the value increase is *marital.*

When Equal is Not Equal

For sake of argument, assume that an equitable-distribution verdict deems *equal* to be equitable and requires an immediate post-trial payout settlement. Based on the benefits formula in place at the prescribed date of valuation, assume A, the employee-spouse, keeps full rights to the pension benefits *earned* to the valuation date and pays B one half of PV_B. With no subsequent passive formula adjustment during survival years, both A and B retain equal values of one half of actual pension benefits (at date of trial, presumed to be 1/2 of PV_B).

However, should the multiplier factor be altered during the post-marital period, say to an average value of the fxF, A will receive an expected benefit stream with the escalated present value $PV_{Bnew} = f \times PV_B$. With an f value greater than one (say 1.25), A will end up with a *net* present value (after payments to B) of considerably more than half of *actual* pension benefits, with B having received a lump sum settlement that is considerably less than half. If the increases in the multiplier are *passive* changes, as described above, the resulting inequality may well be inequitable as well. To illustrative, suppose PV_B (f=1) is determined to have a value of $40,000. With f having a value of 1.25, PV_{Bnew} = 1.25 x $40,000 or is $50,000. With B having received 0.5 of $40,000, or $20,000 and A retaining rights to a pension with a present value of $50,000, A retains on net balance an interest with a present value of $30,000 (= $50,000 - $20,000), or 50 percent more than the present (cash) value awarded to B. Clearly, the use of lump-sum payoffs of retirement-benefit claims has the potential for mischief in the pursuit of equity in ED cases.

Generalizing the Distributional Consequences of Multiplier Adjustments

The fractional distributions to A and B need not be equal. Fraction "a" may be assigned to A and fraction "b" (= 1 - a) to B. In the illustration above, since A retained a pension with a present value of f×PV_B while providing B with a lump-sum distribution with a value of b×PV_B or, equivalently, (1 - a)×PV_B the net present value available to A is (f - b)×PV_B, while the present value of the award to B is (1 - a)×PV_B. In the illustration above, with an f of 1.25 and an "a" (and "b") of .5, the present value retained by A is $30,000 [= (1.25 - .5) × $40,000] and the present value received by B is .5 × $40,000 or $20,000. Of course, the conclusions are perfectly symmetrical if B is the pensioned spouse and A the lump-sum recipient.

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Engagement Letters for Experts in Valuing Damages in Personal Injuries and Wrongful Deaths

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Introduction

When an expert is hired to perform a service, his involvement with his client is commonly called an engagement For the expert to provide the proper service and avoid potential problems with his client(s), the parties should come to an understanding about the engagement before services are provided The understanding about the engagement should include the services to be provided, the responsibilities of the parties to the engagement, and other terms of the engagement including the method of determining the fees for the services, and the dates the fees are to be paid The understanding of the engagement can be left to an oral agreement or the expert may draft a letter that outlines the understanding of the engagement [1] This type of letter is commonly called an engagement letter Experts typically style engagement letters as business letters signed by the expert with a place for the client(s) to sign and accept the terms of the engagement This article describes and provides examples of various provisions that an expert might choose to include in an engagement letter when valuing[2] damages in personal injury and wrongful death cases [3]

Necessity of Engagement Letters

Experts are not required to use engagement letters when providing services However, using engagement letters does provide a convenient means of outlining the engagement to prevent misunderstandings and to provide for a method of resolving future disputes about the engagement should any arise Underwriters of professional liability insurance for CPAs value engagement letters in that they currently quote lower (5 percent less) premiums for those CPAs who use engagement letters on all engagements than for those CPAs who do not use them

Expert witnesses have historically had significant protection from civil liability through a litigation privilege granted to witnesses The current national trend is to exclude negligence of friendly expert witnesses from the litigation privilege A significant recent case

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[1] Professionals frequently use engagement letters even when written engagement proposals are provided to the client

[2] The author has used the terms *valuing* and *valuation* throughout this article to convey the notion that the process used by an expert is more than a mere calculation or computation, the expert commonly determines, considers, and quantifies factors that impact an equivalent monetary value of certain damages, in other words, the process has characteristics of an appraisal process.

[3] Although this article describes engagement letters specifically for valuing damages in personal injury and wrongful death cases, minor modifications could be made to the provisions of the sample engagement letter to tailor them to fit most other types of litigation services provided by experts.

is *Mattco Forge, Inc. v. Arthur Young & Co* [4] In 1992, a California Court of Appeals decided that a statutory litigation privilege that protects attorneys, judges, jurors, witnesses, and other court personnel from liability arising from publications made during a judicial proceeding does not apply to claims of negligence of the expert by the party who hired the expert The court reasoned that the litigation privilege applies to adverse witnesses, but not to friendly witnesses

That California Court of Appeals ruling sent the case back to the lower court for trial. In June 1994, the jury in a Los Angeles Superior Court reached a verdict against the expert and awarded $14 2 million in compensatory damages and approximately $28 million in punitive damages

This case suggests that expert witnesses may be subject to civil liability, therefore, careful attention to matters such as engagement letter preparation may be helpful in avoiding civil liability, controlling legal expenses, and reducing professional liability insurance costs.

Content of Engagement Letters

The content of engagement letters will vary depending on the court system, circumstances, professionals, and clients involved At the end of this article is a sample plaintiff engagement letter and with minor modifications it could be adjusted to be a defense engagement letter It contains 14 paragraphs for experts to consider using when valuing damages in personal injuries and wrongful deaths Each paragraph and major provision is explained in the remainder of this article

Identification of Parties to the Engagement (see Sample Paragraph 1)

Either the attorney[5] or the attorney's client or both may engage the expert Directly engaging the expert by the attorney, or both the attorney and his client, is the first step that the attorney can take to protect expert information from discovery by the opposing party until the attorney decides that he expects to call the expert to testify [6] If the attorney's client hires the expert without the attorney being a party to the engagement, expert information may not be as easy to protect from discovery by the opposing party under either the Federal Rules of Civil Procedure or applicable state rules As included in the sample engagement letter, the attorney, his client, and the expert may benefit by including the attorney's client as a party to the engagement to help prevent misunderstandings and disputes regarding the selection of the expert, the expert's services, and the expert's fees

Identification of Case and Parties to the Litigation (see Sample Paragraph 1)

If the plaintiff's attorney has filed the lawsuit, the engagement letter should identify

[4] *Mattco Forge, Inc v. Arthur Young & Co.*, 6 Cal. Rptr 2d 781

[5] The author intends the use of the word *attorney* to include the attorney's law firm.

[6] The term *expert information* is used in this article to mean (1) facts known or relied upon by the expert, (2) the expert's opinions, and (3) the expert's work product

the case and parties to the litigation, otherwise, the parties to the dispute and related subject matter should be identified As included in the sample engagement letter, the identification of the case and parties to the litigation is another step that helps document that the expert was retained or specially employed in anticipation of litigation or for preparation for trial That is another key element to protecting expert information from discovery from the opposing party until the attorney decides that he expects to call the expert to testify [7]

Restricting Use of Documents Prepared by the Expert (see Sample Paragraph 1)

Unfortunately, documents prepared by an expert might be published or used for purposes other than the intended litigation As a precaution, the sample engagement letter, in the last sentence of the first paragraph, prohibits publishing or using documents prepared by the expert for purposes other than the engagement related case

Discovery of Information, Opinions, and Work Product from Experts (see Sample Paragraph 2)

The scope of discovery in a civil case under the Federal Rules of Civil Procedure and comparable state rules is quite broad Rule 26 of the Federal Rules of Civil Procedure controls the scope of discovery in civil cases before federal district courts In general, discovery is allowed for any matter that is not privileged and is relevant to the case Discovery is even allowed for information that is not admissible at trial if the information appears reasonably calculated to lead to the discovery of admissible evidence Although discovery is generally allowed for any matter that is not privileged and is relevant to the case, the rules of civil procedure provide for specific limitations on certain types of discovery related to expert witnesses

Privileges

The matters that are totally exempt from discovery are those matters that are formally recognized as privileges under the rules of evidence Rule 501 of the Federal Rules of Evidence provides that privileges are governed by the principles of common law and are determined by state law in civil actions governed by state law

Although what constitutes privileges may vary depending on whether federal or state law or which state law applies, privileges commonly include communications in relationships between attorney-client, doctor-patient, priest-penitent, and husband-wife in addition to the privilege against self-incrimination

Generally, these privileges exist unless they are waived Wright, Miller, and Marcus indicate that Rule 26(a)(2) of the Federal Rules of Civil Procedure was designed to require disclosure of attorney-client privileged information that a testifying expert possess [8] That notion is directly supported by the notes of the advisory committee on the rules to the 1993

[7] See the discussion in the section titled "Discovery of Information, Opinions, and Work Product from Experts"

[8] Wright, Miller & Marcus, *Federal Practice and Procedure Civil* 2d § 2016 2

amendments Essentially, any privileged information furnished to a testifying expert becomes subject to disclosure, in other words, the privilege is waived

Work-product

In the above discussion, the term *privilege* was used strictly to indicate that the matter is totally exempt from discovery as opposed to protected from discovery in certain circumstances and not in other circumstances In other words, situations that result in limited immunity from discovery have not been referred to as privileged One such limited immunity matter is that of tangible trial preparation materials, sometimes referred to as attorney work product

The work-product doctrine of the U S Supreme Court case of *Hickman v. Taylor*[9] was substantially incorporated into the Federal Rules of Civil Procedure through the 1970 amendments that created Rule 26(b)(3) Essentially, it defines tangible work-product as tangible things that are relevant, but not privileged, and prepared (1) by the attorney or an agent for the attorney and (2) in anticipation of litigation or for trial, although, the reference to subdivision (b)(4) excluded experts as agents of the attorney Therefore, as noted below under "experts," the notes of the advisory committee on the rules to the 1970 amendments say that expert information is not work product, but it is afforded varying types of protection from discovery under the unfairness doctrine

Experts—Generally

After the *Hickman v. Taylor* case, lower courts made different interpretations of the work-product doctrine, some allowed information from experts to be protected from discovery and others did not. In addition, some courts have allowed information from experts to be protected from discovery as privileged information The notes of the advisory committee on the rules to the 1970 amendments essentially reject previous court decisions that rendered expert information as privileged or as work product of the attorney; however, expert information is afforded varying types of protection from discovery under the unfairness doctrine

The Federal Rules of Civil Procedure and the notes of the advisory committee on the rules provide for four different circumstances regarding experts (1) experts informally consulted, (2) experts retained or specially employed and the attorney does not expect to call the expert to testify, (3) experts retained or specially employed and the attorney expects to call the expert to testify, and (4) experts that are ordinary witnesses

Experts—Informally Consulted.

The notes of the advisory committee on the rules to the 1970 amendments state that subdivision (b)(4)(B) "precludes discovery against experts who were informally consulted in preparation for trial, but not retained or specially employed" One common situation where an expert is informally consulted occurs when the attorney discusses with the expert the possibility of being hired to work on the case, but the expert is not selected, retained, or

[9] *Hickman v Tailor*, 67 S Ct 385

specially employed

Experts—Retained or Specially Employed but Not Expected to Testify

After the attorney retains or specially employs the expert and before the attorney decides that he expects to call the expert to testify as a witness, Rule 26(b)(4)(B) of the Federal Rules of Civil Procedure limits discovery to the following

- Those situations covered by Rule 35 of the Federal Rules of Civil Procedure, which relate to when the mental or physical condition of a person is in controversy In those situations the rule allows the court to order an examination by suitably licensed or certified examiners, such as physicians, dentists, psychologists, and occupational therapists
- Those situations in which the opposing party can show that exceptional circumstances make it impracticable to obtain the facts or opinions on the same topic by other means

A primary example of a showing of exceptional circumstances as described in Rule 26(b)(4)(B) is when no other experts for the particular topic are reasonably available Since many experts in valuing damages in personal injuries and wrongful deaths are available, it is quite unlikely that discovery would be allowed from such an expert who is not expected to be called as a witness at trial

Experts—Retained or Specially Employed and Expected to Testify

Wright, Miller, and Marcus[10] indicate that the attorney must under Rule 26(a)(2)(A) identify an expert as a testifying expert when the attorney decides that he expects to call the expert as a witness Rule 26(a)(2)(B) will then require certain information to be automatically disclosed without a discovery request, including a written report prepared and signed by the expert

The first phrase in that rule, "Except as otherwise stipulated or directed by the court . . ," has essentially given each district court the ability to opt out of the rule by adopting local rules A March 24, 1995, report by the Federal Judicial Center says that Rule 26(a)(2) is in effect in 74 districts, but seven of those have made significant revisions, and not in effect in 20 districts, but four of those have substantially provided for the rule in a Civil Justice Reform Act plan or local rule This automatic disclosure requirement was adopted in the federal rules in 1993 and most of the individual states have not yet included it in their rules of civil procedure While individual states do not always rush to adopt new changes to the federal rules, it is reasonable to expect that the adoption of this rule by individual states will be slower than other rule changes have been, particularly considering the number of federal districts that have opted out of it.

In addition to the automatic disclosures under Rule 26(a)(2)(B), discovery by deposition is allowed by Rule 26 (b)(4)(A) of experts identified whose opinions may be presented at trial

[10] Wright, Miller & Marcus, *Federal Practice and Procedure Civil* 2d § 2031 1

If the expert's role begins with discovery protection because he is not expected to be called as a testifying expert and that role grows into a discoverable role because the attorney decides that he expects to call the expert to testify, all of the expert's work product, expert's opinions, and facts known or relied upon by the expert are discoverable no matter when the work product or opinions were created or facts were obtained The rule does not restrict the time period in which discoverable information was created or became known

Experts—As Ordinary Witnesses

Experts that are not retained, specially employed, or informally consulted on the case, but possess relevant information are treated as ordinary witnesses This group of experts is not directly discussed in the rules, but the notes of the advisory committee on the rules to the 1970 amendments provide for that interpretation

Existence of Conflicts of Interest or Not (see Sample Paragraph 3)

Although many situations are quite clear about whether or not the expert has a conflict of interest, defining exactly what is and is not a conflict of interest may not always be easy The American Institute of CPAs has some literature on conflicts of interest that may be useful to experts That literature includes Interpretation 102-2 of its Code of Professional Conduct That interpretation does not define the term *conflict of interest*, it simply describes general situations that may, although may not, create a conflict of interest That interpretation, in part, follows

> **Conflicts of Interest** . A conflict of interest may occur if a member performs a professional service for a client or employer and the member or his or her firm has a significant relationship with another person, entity, product, or service that could be viewed as impairing the member's objectivity If this significant relationship is disclosed to and consent is obtained from such client, employer, or other appropriate parties, the rule shall not operate to prohibit the performance of the professional service "

The third paragraph of the sample engagement letter provides for an affirmative statement that the expert is not aware of any conflicts of interest If the expert has conflicts of interest that have been waived by the appropriate parties, the third paragraph should be changed to describe the conflicts of interest The attorney and the expert should consider the potential effectiveness of the expert when conflicts of interest exist, although, if the attorney restricts the engagement to an advisor role that is protected from discovery by the opposing party, the effectiveness may be excellent

Limitations That May Require Other Experts (see Sample Paragraph 4)

The development and the ability to support certain assumptions to valuations of damages in personal injuries and wrongful deaths may require experts other than those that have the qualification to make the valuation Non-valuation experts that the case may require include experts in medical, life care, psychiatric, psychological, and vocational rehabilitation

fields Determining the appropriate evidence to present in the case is a legal matter, therefore, the attorney is responsible to identify and proffer the appropriate evidence, including expert testimony or other evidence regarding the above non-valuation areas. Paragraph 4 of the sample engagement letter provides a provision to make it clear that the attorney is responsible for these legal matters

Initial Services to Be Completed and Expected Timing (see Sample Paragraph 5)

The engagement letter may describe any initial services to be provided and if possible the expected completion time It is important to describe what is required of the attorney and his client to be able to provide the services That generally includes obtaining documents and information for the expert The engagement letter may simply refer to another document provided by the expert that catalogues the information and documents that the expert will need

Experts may also provide for a representation in the engagement letter that to the best of the attorney's and his client's knowledge and belief that any information or documents provided by the attorney or his client are true, complete, and correct This type of representation is similar to representations obtained from clients in valuing their business or auditing the financial statements of a person or business

Paragraph 5 of the sample engagement letter provides a description of preparing an economic valuation report as the initial service to be provided along with its estimated completion time, which is dependent upon receiving all the required information.

Update of Written Report Prior to Testimony (see Sample Paragraph 6)

Paragraph 6 of the sample engagement letter provides for a written valuation report to be updated prior to testimony occurring or at any time the attorney makes such a request This is to ensure the best available information is used for testimony purposes

Additional Services That May Be Provided (see Sample Paragraph 7)

Depending on the initial services agreed upon, additional services that the expert may provide will vary In the seventh paragraph, the sample engagement letter describes other types of services the expert may provide This provision simply allows for other possibilities to avoid the need for amendments to the engagement letter for common services provided

Limitation on Responsibility (see Sample Paragraph 8)

Many factors may affect the resolution or outcome of a case An expert's responsibilities must be limited to his opinions and work product and those responsibilities must not extend to all factors that affect the ultimate resolution or outcome of the case The attorney is not required to accept or use the opinions or work product of the expert The expert is hired to provide objective opinions and work product, that is, opinions and work product that are impartial without regard to whether the plaintiff or defendant will benefit

Such a provision in an engagement letter will help clarify that the expert is not a biased hired gun In addition, opposing attorneys may obtain the engagement letter through the discovery process and attempt to use it to lower the credibility of the expert; such a provision will help discourage such attempts by opposing attorneys Paragraph 8 of the sample engagement letter describes these limitations on the responsibility of the expert

Besides limiting the expert's responsibilities to his opinions and work product, the expert may insist upon the client(s) agreeing to limit their possible claims against the expert to the amount of fees charged The opposing party could imply that such a limitation promotes expert witnesses to testify untruthfully and biased in favor of his client, although the logic of that argument seems faulty The trier of fact principally expects the expert to be unbiased or biased in favor of his client Rarely, if ever, would the trier of fact expect the expert to be biased against his client, which is the type of untruthfulness that could be promoted by the expert's client agreeing to limit his claims against the expert This type of limitation should not be extended to possible claims of third parties because that could be exploited by the opposing party as promoting biased testimony in favor of the client

The sample engagement letter simply limits the expert's responsibilities to his client(s) to the amount of fees that have been collected for services rendered, exclusive of reimbursed expenses

Amount and Timing of Fee Payments (see Sample Paragraphs 9, 10, and 11)

Clear communication about the expert's fees is important in preventing surprises, misunderstandings, and unhappy clients Absent an open-ended fee arrangement, the sample engagement letter provides several types of provisions that will help provide clear communication about the expert's fees

Having both the attorney and the attorney's client responsible for payment of the fees is generally best for all parties Generally the expert does not have to be concerned about whether or not the attorney can pay the fees without the attorney winning the case If the attorney is not responsible for payment of the fees, at least in addition to his client, the expert along with the attorney will need to evaluate the ability of the attorney's client to pay the fees without a victory in the case and to have the fees current at the time of trial. If the fees are not current at the time of the trial or there is a significant risk that the client cannot pay the fees without a victory in the case, the opposing party can attack the objectivity of the expert and possibly undermine his credibility with the trier of fact This situation presents a similar risk as if the expert's fees were a contingency fee arrangement If the attorney is not willing to have any responsibility for payment of the expert's fees, the expert may deal with the difficult situation by requiring advance payments of estimated amounts before a final written report is issued or testimony is given. An engagement letter provision for estimated payments that could be included in the sample engagement letter is as follows

> Despite the above payment terms, all services provided in preparing a written valuation report must be paid before its issuance In addition, all fees related to testimony in depositions or trial must be paid in advance based on an estimate or I am not obligated to be present for testimony

Rule 26(b)(4)(C) of the Federal Rules of Civil Procedure provides for the circumstances when the opposing party must pay for some of the expert's fees The sample

engagement letter provides for a separate invoice for any portion of the expert's fees and expenses that the attorney directs to be charged to the defendant and defendant's attorney In addition, the attorney and the attorney's client remain responsible for payment of the fees, since it is the attorney's responsibility to get the court to order payment if the fees are in dispute

Resolving Disputes (see Sample Paragraph 12)

Methods of resolving disputes that arise about the services provided by an expert include out-of-court negotiations and settlements by the parties, litigation in the appropriate court system, and alternative methods to litigation The traditional litigation process is expensive and may stretch over a long time for many reasons, including that court resources are scarce As a result, alternative methods have developed to resolve civil disputes, arbitration is extremely common among such techniques

Arbitration is a process in which the parties to the dispute are heard at a hearing conducted by a neutral third party, the arbitrator Two basic issues that parties to an arbitration must agree upon are whether or not the arbitrator's decision can be binding or not and what procedural rules will apply to the arbitration process, including the hearing If the decision is binding, the parties to the dispute give up the right to have the dispute decided in a court of law before a judge or jury and instead are accepting the use of arbitration for resolution

The parties to an arbitration frequently agree to use the procedural rules of the American Arbitration Association.[11] The commercial arbitration rules are appropriate for engagements of experts, although CPAs might choose to use the arbitration rules for professional accounting and other related services disputes Since the commercial arbitration rules do not authorize full discovery, it will be quite limited or not exist Since everyone in the United States has a right to resolve disputes through the state and federal court systems, alternative dispute resolution methods depend upon the parties to the dispute agreeing to use an alternative method,[12] particularly when the third party has the power to impose a solution As a result, arbitration is a contractual matter between the parties, a party cannot be required to arbitrate a matter for a binding decision without a valid contractual agreement

Paragraph 12 of the sample engagement letter provides a contractual agreement for any disputes to be decided by arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association

In addition to the arbitration matter, paragraph 12 of the sample engagement letter provides for the attorney and his client to pay reasonable attorney fees incurred by the expert to collect or pursue arbitration for past due invoices if any portion of the unpaid fees are determined to be due Essentially the performance of expert services without immediate or

[11] Experts desiring to draft modification clauses to the Commercial Arbitration Rules of the AAA should refer to *Drafting Dispute Resolution Clauses—A Practical Guide* and *Drafting Dispute Resolution Clauses for Professional Accounting and Related Services Disputes* by the AAA Those publications as well as others may be obtained free of charge by calling the AAA's primary office in New York City at (212) 484-4000

[12] This excludes those arbitrations that are required by certain courts for certain types of cases, although, those arbitrations do not contain binding decisions

advance payment results in a granting of credit Many commercial enterprises have learned that having the creditor responsible for reasonable attorney fees related to collection can be important or some individuals or businesses will not pay amounts due that are smaller than the attorney fees required to pursue collection To keep the requirement to pay reasonable attorney fees from being one sided, the sample letter does not provide for the expert's attorney fees to be paid by the engaging attorney if the arbitrator determines that none of the unpaid fees are due

Halting Services or Terminating Engagements (see Sample Paragraph 13)

Three types of situations may result in the expert halting services or terminating the engagement, which are the following.

- Invoices for services rendered are not timely paid.
- A change in the attorneys or parties involved in the case
- Information becomes known that makes the expert's services inappropriate, for example, the expert may become aware of facts that leads the expert to conclusions that are significantly different from the attorney's desire and the attorney strongly expects or insists on the expert rendering an opinion with which the expert disagrees Besides it being unethical for the expert to render such an opinion, the opposing party may destroy the expert's testimony and even leave a record for impeachment of the expert's credibility in future cases

Paragraph 13 of the sample engagement letter specifically reserves the right to halt further services or terminate the engagement for any of the above reasons

Effective Date of Engagement Letters (see Sample Paragraph 14)

To prevent any misunderstanding that the expert has accepted an engagement, paragraph 14 of the sample engagement letter makes it clear that the engagement does not begin until the attorney signs the engagement letter and returns it to the expert. In addition, it does not become effective until the retainer is paid to the expert

Summary

Using engagement letters provides a convenient means of documenting the parties' understanding of the engagement. Engagement letters can help prevent misunderstandings about the services to be provided, the responsibilities of the parties to the engagement, and the terms of the engagement In addition, they may help document that the expert's opinions, expert's work product, and facts known or relied upon by the expert are protected from discovery by the opposing party until the attorney decides that he expects to call the expert to testify With an appropriately structured engagement, the attorney will have a chance to know and understand the expert's opinions and work product before he decides that he expects to call the expert to testify. The content of engagement letters will vary depending on the court system, circumstances, professionals, and clients involved

Sample Plaintiff Engagement Letter:
Economic Damages Valuation Report

Letterhead of Expert

[Date of Letter]

[Mr or Ms] [Attorney's Name]
[Law Firm's Name]
[Street Address]
[City, State, & Zip Code]

Dear [Mr. or Ms] [Attorney's Last Name]

1. This letter is the entire agreement between [Law Firm's Name] ("you"), [attorney's client's name] ("your client") and W Wade Gafford, CPA ("I" or "me") under which I will provide litigation consulting services in the matter of [Plaintiff's Name] v [Defendant's Name] before the [Name of Court and Location], which matter is Docket Number [number to identify case] Should any provision of this agreement become inoperative, all other provisions of this agreement shall remain in full force and effect Any documents that I prepare may not be published or used for any purpose other than the above referenced case

2. You do not currently expect to call me as an expert witness to testify As a result, the litigation consulting services to be provided, which include my opinions, my work product, and facts known or relied upon by me, are to be protected from disclosure in accordance with [See Table 1 for rule or code reference]. Should you decide that you expect to call me as an expert witness to testify in the above referenced case, my opinions, my work product, and facts known or relied upon by me will at that time become subject to disclosure in accordance with [See Table 1 for rule or code reference] You agree to make scheduling arrangements with me for any testimony that I am to give in a deposition or trial

3 I am not aware of any conflicts of interest that I have with any parties to the litigation If I become aware of any, I will immediately notify you

4 My consulting services will relate to the valuation of damages in the above referenced case You will advise on all legal matters, including informing me of any legal deadlines related to my services Certain assumptions to a damages valuation may need to be drawn from expert opinions or other sources of evidence relating to medical, life care, psychiatric, psychological, and vocational rehabilitation information Since determining the appropriate evidence to present or refute in the case is a legal matter, you are responsible to identify and proffer or refute the appropriate evidence, including expert testimony or other evidence regarding the above types of assumptions to a damages valuation

5 My initial consulting service is to provide a written valuation report of the

following economic damages resulting from past and future (a) loss of earnings, including impaired earnings capacity, (b) loss of household services provided by the [injured or deceased], and (c) expenses related to the [injury or death] including medical and other related expenses I anticipate that I can complete the valuation report within [number] days of receiving the completed data form along with all related documents A copy of the data form is enclosed with this agreement You and your client represent to the best of your knowledge and belief that all information and documents you or your client have provided or will provide me are true, correct, and complete, therefore, I may rely upon such information and documents without independent investigation and verification.

6 If I am scheduled to testify in court or if you request an updated written valuation report, I am to prepare an appropriately updated written valuation report.

7 In addition, my consulting services may include any of the following if you make a request for such services.

- Conveying objective expert knowledge to you to help you prepare questions for depositions or written interrogatories relating to any valuation prepared for the case of the defense
- Evaluating or designing structured settlements, that is, settlements that include one or more payments to the plaintiff after the date of the settlement agreement
- Performing a valuation of hedonic damages
- Such other services that you specifically request

8 Many factors may affect the resolution or outcome of the above referenced case My responsibilities are limited to my opinions and work product and do not extend to all factors that affect the ultimate resolution or outcome of the case You are hiring me to provide objective opinions and work product, that is, opinions and work product that are impartial without regard to whether the plaintiff or defendant will benefit

9 You will advise me of any work you desire to be completed in addition to the written valuation report and I will provide you with an estimate of the time required to complete each request that you make The time required will depend upon the extent and nature of available information, as well as the developments that may occur as work progresses In the event it becomes necessary to expend more time than was included in my estimate, I will discuss the situation with you prior to expending more time

10 I will submit to you invoices for my services twice each month for the periods from the first through the 15th and the 16th through the end of the month You and your client are jointly and severally liable for payment for my services. I will provide you with a separate invoice for any portion of my fees and expenses that you direct are to be charged to the defendant and defendant's attorney, although ultimate responsibility to pay the invoices remains with you and your client The invoices will be payable within 15 days of your receipt The invoices will be based on the sum of the following

- A flat fee of [$1,400] for the economic damages valuation report, [$2,000] should you decide for the valuation report to include both economic and hedonic damages.

- A flat fee for each updated written valuation report I prepare The flat fee will be [$450] for an economic damages valuation report or [$650] for an economic and hedonic damages valuation report
- A charge for hours expended on the engagement other than those hours required to develop, prepare, and update a valuation report. The charge for those hours will be [$200] per hour for testimony in depositions or at trial and [$175] per hour for any other time expended, including preparation time for testimony Time expended includes round trip travel time and time spent waiting at depositions or in court to testify
- A scheduling fee of [$200] for each of my appearances at depositions or trial that are canceled within [72] hours of the scheduled appearance
- A minimum fee of the greater of (a) [$450] or (b) [$175] per hour expended, if this engagement terminates prior to providing an economic damages valuation report
- Cost of travel and out-of-pocket expenses
- A late charge of the lesser of (a) 1 5 percent per month compounded monthly or (b) the highest rate allowable by law
- My hourly and flat rates are subject to change in January of each year I agree to charge you the rates quoted in this agreement for services performed through December 31, [1996] In January of each calendar year for services performed after December 31, [1996], I may adjust the rates I charge to reflect inflation from [December 1995] to the most recent December period as measured by the consumer price index for all urban workers

11 My normal practice in this type of litigation consulting engagement is to receive a retainer of [$750] before beginning work The retainer is not intended to be an estimate of the total charges for the work to be performed The retainer will be applied to the final invoice for the engagement, any unused portion of the retainer will be refunded

12 If not resolved through negotiation by the parties, any controversy, dispute, or claim arising out of, relating to, or breach of this agreement shall be settled by binding arbitration administered by the American Arbitration Association under its Commercial Arbitration Rules A judgment consisting of the award rendered by the arbitrator(s) may be entered in any court having jurisdiction. You and your client agree (a) that my liability is limited to the fees that I have collected for services rendered, exclusive of reimbursed expenses and (b) to pay reasonable attorney fees incurred by me to collect or pursue arbitration for past due invoices if any portion of my unpaid fees are determined to be due

13 I reserve the right to halt further services or terminate this engagement for (a) invoices that are not timely paid, (b) or a change in the attorneys or parties involved in the above referenced case, or (c) information becomes known that makes my services inappropriate.

14 The proposed terms of this letter are subject to change if not accepted within 15 days of the date of this letter This agreement will become effective as soon as you sign and date this letter and return one original to me with the retainer A second original of this letter is enclosed for your records

Very truly yours,	Accepted on behalf of [Name of Law Firm] by	Accepted by
[W Wade Gafford, CPA]		
	[Name of Attorney]	[Name of Attorney's Client]
	Date	Date

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Table 1
Rules Relating to Scope of Discovery of Expert Information

Court System	Discovery Rule Relating to Non-testifying Expert	Discovery Rule Relating to Testifying Expert
Federal	Federal Rules of Civil Procedure, Rule 26(b)(4)(B)	Federal Rules of Civil Procedure, Rules 26(a)(2)[13] and 26(b)(4)(A)
Alabama	Alabama Rules of Civil Procedure, Rule 26(b)(4)(B)	Alabama Rules of Civil Procedure, Rule 26(b)(4)(A)
Alaska	Alaska Rules of Civil Procedure, Rule 26(b)(4)(B)	Alaska Rules of Civil Procedure, Rules 26(a)(2) and 26(b)(4)A)
Arizona	Arizona Rules of Civil Procedure, Rule 26(b)(4)(B)	Arizona Rules of Civil Procedure, Rule 26(b)(4)(A)
Arkansas	Arkansas Rules of Civil Procedure, Rule 26(b)(4)(B)	Arkansas Rules of Civil Procedure, Rule 26(b)(4)(A)
California	California Code of Civil Procedure § 2018(b)	California Code of Civil Procedure § 2034
Colorado	Colorado Rules of Civil Procedure, Rule 26(b)(4)(B)	Colorado Rules of Civil Procedure, Rules 26(a)(2) and 26(b)(4)(A)
Connecticut	Connecticut Superior Court Rules—Civil Cases § 220(B)	Connecticut Superior Court Rules—Civil Cases § 220(A)
Delaware	Delaware Superior Court Civil Rules, Rule 26(b)(4)(B)	Delaware Superior Court Civil Rules, Rule 26(b)(4)(A)

[13] The first phrase in that rule, "Except as otherwise stipulated or directed by the court ," has essentially given each district court the ability to opt out of the rule by adopting local rules. A March 24, 1995, report by the Federal Judicial Center says that Rule 26(a)(2) is in effect in 74 districts, but seven of those have made significant revisions, and not in effect in 20 districts, but four of those have substantially provided for the rule in a Civil Justice Reform Act (CJRA) plan or local rule The individual district information provided by the Federal Judicial Center report is included in Wright, Miller, & Marcus or can be obtained from the Federal Judicial Center by calling 202-273-4070.

District of Columbia	District of Columbia Superior Court Rules of Civil Procedure, Rule 26(b)(4)(B)	District of Columbia Superior Court Rules of Civil Procedure, Rule 26(b)(4)(A)
Florida	Florida Rules of Civil Procedure, Rule 1 280(b)(4)(B)	Florida Rules of Civil Procedure, Rule 1 280(b)(4)(A)
Georgia	Code of Georgia Annotated § 9-11-26(b)(4)(B)	Code of Georgia Annotated § 9-11-26(b)(4)(A)
Hawaii	Hawaii Rules of Civil Procedure, Rule 26(b)(4)(B)	Hawaii Rules of Civil Procedure, Rule 26(b)(4)(A)
Idaho	Idaho Rules of Civil Procedure, Rule 26(b)(4)(B)	Idaho Rules of Civil Procedure, Rule 26(b)(4)(A)
Illinois	Illinois Supreme Court Rules, Rules 220(a)(2) and 220(c)(5)	Illinois Supreme Court Rules, Rules 220(a)(1), 220(b)(1), and 220(c)(1), (2), (3), (4)
Indiana	Indiana Rules of Trial Procedure, Rule 26(B)(4)(b)	Indiana Rules of Trial Procedure, Rule 26(B)(4)(a)
Iowa	Iowa Rules of Civil Procedure, Rule 125(b)	Iowa Rules of Civil Procedure, Rule 125(a)
Kansas	Kansas Statutes Annotated § 60-226(b)(4)(B)	Kansas Statutes Annotated § 60-226(b)(4)(A)
Kentucky	Kentucky Rules of Civil Procedure, Rule 26 02(4)(b)	Kentucky Rules of Civil Procedure, Rule 26 02(4)(a)
Louisiana	Louisiana Code of Civil Procedure Annotated Article 1425(2)	Louisiana Code of Civil Procedure Annotated Article 1425(1)
Maine	Maine Rules of Civil Procedure, Rule 26(b)(4)(B)	Maine Rules of Civil Procedure, Rule 26(b)(4)(A)
Maryland	Maryland Circuit Court Rules of Civil Procedure, Rule 2-402(e)(2)	Maryland Circuit Court Rules of Civil Procedure, Rule 2-402(e)(1)
Massachusetts	Massachusetts Rules of Civil Procedure, Rule 26(b)(4)(B)	Massachusetts Rules of Civil Procedure, Rule 26(b)(4)(A)
Michigan	Michigan Rules of Civil Procedure, Rule 2 302(B)(4)(b)	Michigan Rules of Civil Procedure, Rule 2 302(B)(4)(a)

Minnesota	Minnesota Rules of Civil Procedure, Rule 26 02(d)(2)	Minnesota Rules of Civil Procedure, Rule 26.02(d)(1)
Mississippi	Mississippi Rules of Civil Procedure, Rule 26(b)(4)(B)	Mississippi Rules of Civil Procedure, Rule 26(b)(4)(A)
Missouri	Missouri Supreme Court Rules of Civil Procedure, Rule 56.01(b)(4)[14]	Missouri Supreme Court Rules of Civil Procedure, Rule 56 01(b)(4)
Montana	Montana Rules of Civil Procedure, Rule 26(b)(4)(B)	Montana Rules of Civil Procedure, Rule 26(b)(4)(A)
Nebraska	Author did not have access to court rules to provide reference	Author did not have access to court rules to provide reference.
Nevada	Nevada Rules of Civil Procedure, Rule 26(b)(4)(B)	Nevada Rules of Civil Procedure, Rule 26(b)(4)(A)
New Hampshire	Author did not have access to court rules to provide reference	Author did not have access to court rules to provide reference
New Jersey	New Jersey Civil Practice Rules, Rule 4 10-2(d)(3)	New Jersey Civil Practice Rules, Rules 4 10-2(d)(1) and 4.10-2(d)(2)
New Mexico	New Mexico Rules of Civil Procedure, Rule 1-026(B)(6)	New Mexico Rules of Civil Procedure, Rule 26(B)(5)
New York	New York Civil Practice Law and Rules § 3101(d)(2)	New York Civil Practice Law and Rules § 3101(d)(1)
North Carolina	North Carolina General Statutes § 1A-1, Rule 26(b)(4)	North Carolina General Statutes § 1A-1, Rule 26(b)(4)(a)
North Dakota	North Dakota Rules of Civil Procedure, Rule 26(b)(4)(B)	North Dakota Rules of Civil Procedure, Rule 26(b)(4)(A)
Ohio	Ohio Civil Rule 26(B)(4)(a)	Ohio Civil Rule 26(B)(4)(b)
Oklahoma	Oklahoma Statutes Annotated Title 12 § 3226(B)(3)(b)	Oklahoma Statutes Annotated Title 12 § 3226(B)(3)(a)

[14] Missouri rules only provide for discovery from experts expected to be called as a witness The rules do not include a section similar to the federal rules regarding experts not expected to be called as a witness, therefore, complete protection appears to be provided to non-testifying experts

Oregon	Oregon Rules of Civil Procedure, Rule 36(B)(3)	Oregon Rules of Civil Procedure, Rule 36(B)(3)[15]
Pennsylvania	Pennsylvania Rules of Civil Procedure, Rule 4003 5(a)(3)	Pennsylvania Rules of Civil Procedure, Rules 4003 5(a)(1) and (2)
Rhode Island	Rhode Island Superior Court Rules of Civil Procedure 26(b)(2)	Rhode Island Superior Court Rules of Civil Procedure 26(b)(2)
South Carolina	South Carolina Rules of Civil Procedure, Rule 26(b)(4)(B)	South Carolina Rules of Civil Procedure, Rule 26(b)(4)(A)
South Dakota	South Dakota Code of Laws Annotated § 15-6-26(b)(4)(B)	South Dakota Code of Laws Annotated § 15-6-26(b)(4)(A)
Tennessee	Tennessee Rules of Civil Procedure, Rule 26 02(4)(B)	Tennessee Rules of Civil Procedure, Rule 26 02(4)(A)
Texas	Texas Rules of Civil Procedure, Rule 166b(3)(b)	Texas Rules of Civil Procedure, Rule 166b(2)(e)
Utah	Utah Rules of Civil Procedure, Rule 26(b)(4)(B)	Utah Rules of Civil Procedure, Rule 26(b)(4)(A)
Vermont	Vermont Rules of Civil Procedure, Rule 26(b)(4)(B)	Vermont Rules of Civil Procedure, Rule 26(b)(4)(A)
Virgin Islands	Virgin Islands Rules of the Territorial Court, Rule 39 and Federal Rules of Civil Procedure, Rule 26(b)(4)(B)	Virgin Islands Rules of the Territorial Court, Rule 39 and Federal Rules of Civil Procedure, Rule 26(a)(2) and 26(b)(4)(A)
Virginia	Virginia Supreme Court Rules, Rule 4 1(b)(4)(B)	Virginia Supreme Court Rules, Rule 4 1(b)(4)(A)
Washington	Washington Superior Court Civil Rules, Rule 26(b)(5)(B)	Washington Superior Court Civil Rules, Rule 26(b)(5)(A)
West Virginia	West Virginia Rules of Civil Procedure, Rule 26(b)(4)(B)	West Virginia Rules of Civil Procedure, Rule 26(b)(4)(A)

[15] Oregon appears to consider expert information the same as trial preparation material, therefore, there is no distinction between testifying and non-testifying experts Discovery from experts is not specifically provided in Oregon's rules as is provided in the federal rules

Wisconsin	Wisconsin Rules of Civil Procedure, Rule 804 01(2)(d)(2)	Wisconsin Rules of Civil Procedure, Rule 804.01(2)(d)(1)
Wyoming	Wyoming Rules of Civil Procedure, Rule 26(b)(4)(B)	Wyoming Rules of Civil Procedure, Rule 26(b)(4)(A)

Estimating The Economic Damage Resulting From The Pollution Of A Municipal Water Supply

James F Horrell and D Craig Shew*

Introduction

In the 1920s oil and gas exploration began in the southeastern part of Caddo County which is located in western Oklahoma Included in this area of development was the aquifer which served as a municipal water supply for the Town of Cyril In the late 1940s Cyril was forced to abandon its first water wells because of saltwater pollution resulting from early oil field development On several occasions through the years that followed, Cyril was forced to move its water well to a new location to obtain unpolluted water. Although each successive move brought good water, saltwater pollution eventually contaminated the aquifer to the extent that Cyril was forced to abandon the aquifer and seek an alternative source as its municipal water supply

The most attractive alternative source of water was a nearby rural water district which had excess water, and was willing to contract for the sale of that water in sufficient quantities to meet the needs of the Town However, the cost of purchased water substantially exceeded Cyril's previous production costs, and depending on the amount of water used, resulted in a 400 to 500 percent increase in water rates for Cyril residents Consequently, Cyril filed suit for the benefit of itself and its residents seeking compensation for the cost of replacing the polluted water, among other elements of economic damage [1] Confronted with the problem of developing an appraisal of the economic damage suffered by Cyril as a result of the pollution, the forensic economist must address a number of issues, including (1) What is the legal basis for liability, i e , what statutes apply and to what extent do these statutes allow for recovery of damages incurred? (2) What are the central economic concepts and methods being applied in natural resource damage assessments and which of these are applicable to the current situation? (3) What variables must be considered, are these variables random, are the distributions of these random variables known, and which of the variables have a major impact on the assessment methodology? and (4) How can the assessment be presented in a manner that will be comprehensible to a lay jury?

The legal basis for liability will be already researched when the forensic economist enters into the case and his principle responsibility in this area will be to thoroughly integrate the legal basis into his/her perspective of the specific case An overview of the legal analysis of the theories and claims relevant to natural resource damages can be found in Ward and Duffield [1992] The Comprehesive Environmental Response, Compensation and Liability Act of 1980, gave federal, state, and local governments the right as trustees to sue for damages resulting from the release of harmful materials into publicly owned natural resourses such as rivers, lakes, estuaries, oceans, or other aquatic or terrestial habitats An important distinction in the components of the damages that can be recovered are the "use

* Professor at the University of Oakland and Ph D , J D , Ada, Oklahoma

[1] Other elements of economic damage which Cyril was seeking include (1) the cost of running a pipeline approximately five miles to connect the rural water district pipeline to Cyril's delivery systen, (2) Cyril's attorneys' fees and costs in a separate but related action in which Cyril was made a party, brought by the Oklahoma Corporation Commission seeking restoration of the aquifer, (3) punitive damages, and (4) attorneys' fees and costs of the present action These elements of damage are not included in this paper

values" and "nonuse values"[2] classifications "Nonuse" refers to option and existence values, where as "use" values refer to the direct uses of the resource Nonuse valuation is, of course, more difficult and some of the methodologies applied are subject to more rigorous examination, and can be controversial Direct use valuation has potential areas for debate, but is still quite manageable. For the valuation of the pollution of the aquifer which supplied Cyril with its water, the damages suffered by the City that were of a direct use were dominate and at the request of Cyril's legal councel the nonuse values were ignored Thus, focusing on the direct use value damage caused by the pollution and recognizing Cyril and its residents as a microeconomic unit, attention was directed towards conventional compensatory damages, (i e , what was the cost of the water prior to the pollution and what is the current and future costs of the water) In this microeconomic framework the problem is narrowed to one of forecasting the future costs and reducing those costs to a present value figure This paper elaborates on the specifics of considerations and determinations for questions (2), (3) and (4) as they relate to Cyril's damages, (i e., the conditions surrounding the pollution, the variables affecting the appraisal of future water costs, and the subsequent analysis that was developed and presented at trial)

Causes And Sources Of Pollutants

From the early days of primary oil production to the 1950s, the saltwater produced through oil drilling was collected in saltwater disposal pits These pits were nothing more than unlined impoundments near well sites where produced saltwater was collected for disposal Although sometimes referred to as "evaporation pits," the primary means of disposal amounted to saltwater leaking into the groundwater aquifer Even after this disposal practice ceased in the mid-1950s, the saltwater which had already leaked into the aquifer continued to move slowly down gradient causing more widespread pollution, and infiltration over time continued to cause residual salt to leach out of the abandoned pits into the underlying aquifer

In addition, a second, more recent source of pollution came from the unitized operations in the area of Cyril's municipal water supply. In the 1960s and 1970s the Oklahoma Corporation Commission authorized the formation of several units which utilized many of the existing wells in the area for secondary recovery operations by high-pressure saltwater flooding As alleged by Cyril in its Complaint, many aspects of the unit operations contributed to the already existing pollution including the following the failure to insure that unit flood zones of non-unit wells were cemented, the failure to replug previously plugged and abandoned wells which were not properly plugged to withstand high-pressure injection fluids, the failure to repair and/or replace well casing known to be in a weakened or collapsed condition, the lack of sufficient surface casing to protect the fresh water sands, overpressurization, and, the failure to take appropriate remedial action following known pollution incidents

After reviewing the available data with respect to both the sources and the areal extent of the pollution in 1989, the Oklahoma State Department of Health determined that the Town of Cyril's public water supply was polluted by saltwater to the extent that a change in the water source was needed to safeguard the public health due to the likelihood of the complete

[2] See Knopp and Smith (1993)

loss of the present source As a result, the Town of Cyril entered into a consent decree which required the Town to find an alternate source of supply By January of 1991, Cyril began purchasing water from a rural water district at a cost which substantially exceeded its earlier production costs

The Determination Of The Present Value Of Future Water Costs

An Overview of the Approach Used

The present value of the future water costs "y" is a multivariate function of several random variables

$$y = f(x_1, x_2, x_3, x_4, x_5)$$

Actually, there are more than five random variables that would influence the present value of the future water costs, however, the major variable influences are (1) X_1, the amount of water usage that must be replaced and the current marginal cost of replacement of the water, (2) X_2, the appropriate growth rate/discount rate differential ratio, (3) X_3, the length of time the original source of water will remain polluted, (4) X_4, the level of the Town's population, and, (5) X_5, the cost of replacement water through time due to supply and demand factors (i e , true economic price increases, aside from normal inflationary increases)

The distributions of the random variables are not known, and little if any data is available that would allow empirical estimation If such information was available, then, an expected value based analysis would allow the jury to see an average present value cost It would be essential to supplement this estimate with an estimate of the variability of the estimate, thus providing some notion of the range of possible total present value costs In essence, the jury needs something on the order of a confidence interval on the present value of the future water costs in order to provide an informed verdict Fortunately, by considering the variables in turn and selecting representative values of each in an appropriate range, a range of calculations can be generated that will provide the jury with a basis for an informed decision

The need for evaluating the various factors and the ranges through which they might reasonably vary, along with the necessity for presenting relatively complex calculations in an understandable form to a jury, posed a considerable challenge To aid in this process an interactive spreadsheet template, illustrated in Exhibit 1, ("Template") was created in a question-and-answer format[3] This approach not only permitted many variables to be evaluated quickly, but it also formed the basis for presenting a relatively complex set of calculations in an organized fashion to the jury These assumptions with respect to possible values for the factors mentioned above, the underlying basis for each assumption, and a sensitivity analysis of the consequences of varying these factors are presented in part B below

[3] An example of the Template, entitled "FACTORS. OF DAMAGE CALCULATIONS," is shown in Exhibit 1 Specific input variables are included at lines 1, 2, 4, 6, 8, and 11-14 Internal calculations are made at lines 3, 5, 7, and 9, and the present value of a future water cost based on these particular variables is calculated at line 15 Reference to the template throughout the remainder of the paper will assist the reader in capturing the essence of the calculation

Factors Affecting Future Water Cost

1 Level of Water Usage and Current Cost

In determining the amount of water usage that must be replaced, the nine-year period, 1985 through 1993, was used to determine an average annual residential water usage Exhibit 2, presents an historical look at the metered water usage As shown in Exhibit 2, the average annual residential usage for Cyril was 60,953,000 gallons This nine-year period was selected because the three years prior to 1985 reflected a period when there was a plant in operation that made use of water not now being used Although that was the case at the time the original calculation was made, as the time approached for trial, the plant reopened, as is reflected in the increased monthly usage for the months of March through September in 1994. Consequently, an adjustment was made to formally incorporate this fact into the presentation at trial The adjustment made involved estimating the amount of commercial usage based on the available data and incorporating it as a factor in the overall calculation

All municipal water systems have some percentage of unaccounted for water This percentage is the difference between the amount of water metered in and the amount metered out and billed to the water users This difference arises because of leaks in the distribution system, worn meters which fail to record the full volume, meter reading and billing errors, unmetered water used by the municipality for fires and other reasons, and, in some cases, water meters that are altered or bypassed by water users Based on a detailed review of Cyril's water records, defendants contended that Cyril's unaccounted for water was excessive Although Cyril's municipal water supply expert testified that the amount of unaccounted for water was within a normal range, a percent adjustment factor was added at line 4 of the Template to evaluate the results of defendants' expert on this issue

Once the average annual adjusted total usage was determined, the annual cost per base volume at line 7 of the Template could be determined by multiplying by the contract cost of the replacement water at $1 85 per 1000 gallons This price was tied to the cost of other customers of the Water District and was slated to increase indeterminate amounts through time Cyril was required to purchase a minimum of 2 5 million gallons of water per month from the the new water supplier, with a maximum not to exceed six million gallons of water per month, and premiums would be charged for excesses

When Cyril began purchasing water, it was able to realize a saving in terms of maintenance, lease, electrical, and other costs that were incurred when municipal wells served as the supply source These miscellaneous expenses were estimated and an adjustment made to the cost of the water at line 8 of the Template The estimates of the annual saved expense appear in Exhibit 3

2 An Appropriate Growth Rate/Discount Rate Differential

Oklahoma statutes limit the types of securities that a city can hold as investments In particular, cities are limited to (1) direct obligations of the United States Government, (2) certificates of deposits of savings and loan associates, banks and trust companies when properly collateralized, (3) savings accounts or savings certificates fully insured, or, (4) investments authorized by Section 348 3 which are fully collateralized Of the possible

investment vehicles, long-term U. S treasuries are clearly the preferable investment

Since interest rates vary through time and are affected by the expected inflation rate, it is not logical to pick a individual interest rate for discounting the long range forecasts that this appraisal requires Thus, some appropriate average rate should be selected

The National Water and Wastewater Rate Survey and the American Water Works Association were consulted for information concerning the historical growth rate in the cost of water According to these sources, to date, increases in the cost of water have been keeping pace with the rate of inflation

In this context, the long-term geometric average inflation rate and the corresponding long-term U S treasury's geometric average interest rates were considered The relative differential between these values was used for determining the present value of the future annual cost of replacing the polluted water (Since the true economic price increases in the cost of the water pose considerable difficulties when coupled with these variables, the true economic price increase variable is treated separately.) Over the period running from 1926 through 1989, the geometric average return on long-term government bonds has been 4 6 percent, while the average inflation rate has been 3 1 percent [4] Over this 63-year period the average differential between the inflation rate and the rate paid by long-term government bonds has been -1 4 percent [5] This differential was used throughout all the various scenarios considered for determining the present value of future costs of replacing the required water

3 Length of Time the Original Water Source Would Remain Polluted

One of the primary concerns in calculating Cyril's future water cost was the length of time required for Cyril to purchase water This element of future water cost depends on the length of time Cyril's well field would remain polluted, and is a function of, among other factors, the rate of groundwater movement [6] Both plaintiff and defendants employed hydrogeological experts who were able to provide an estimate of the rate of groundwater movement Based on these estimates, along with knowing the areal extent of the saltwater plume with respect to Cyril's well field and other factors, the projected length of time Cyril's well field would remain polluted ranged from 50 to 175 years [7]

Based on these opinions a decision was made to make calculations for horizons at, 50, 100, and 175 years Since the best evidence available has considerable variability within it, then the prudent action would be to make calculations showing the impact of the variability on the amount of damages Doing this type of sensitivity analysis places the decision of what should be considered the most credible evidence, exactly where the system has placed

[4] See Ibbotson and Sinquefield (1990)

[5] Defendant's economic expert used the same data to calculate the average differential but ignored the period from 1942 to 1951 This results in a differential of -0 0261 which in turn gives a lower present value water cost

[6] Unlike rivers and streams, for example, where the rate of movement is measured in miles per day, the usual rate of groundwater movement is measured in feet per year Thus, groundwater pollution tends to remain for extraordinarily long periods of time

[7] Cyril's expert estimated the rate of groundwater movement to be about 100 feet per year which corresponds to the pollution remaining for 50 years Defendant's expert calculated a slower rate of movement and the longer pollution time

that responsibility, in the hands of the jury or the trier of fact

4 Changes in the Population

According to the Oklahoma State Data Center, the Census Data for the population of Cyril since 1920 has been as follows

Year	1920	1930	1940	1950	1960	1970	1980	1990
Population	386	922	972	998	1284	1302	1220	1072

These values are shown graphically in Exhibit 4 An examination of that graph reveals three arrows that indicate the directions the population would be predicted to move should various periods be used as a base for forecasting the population The arrows emanating from the plotted values have labels that are indicative of the base used to calculate the growth rate of the population

From 1970 until 1990 the population of Cyril has fallen at the rate of approximately 1 percent per year From 1950 until 1960 the population of Cyril grew at a rate of approximately 3 percent per year From 1950 until 1990 the population of Cyril grew at a rate of 0 2 percent per year From 1920 until 1990 the population of Cyril grew at a rate of 1 5 percent per year Finally, from 1980 until 1990 the population of Cyril declined at a rate of 1.3 percent per year. Recall that the decade of the eighties was the period that the plant closed

The point of presenting the above calculations is that size of population affects the water usage, and the water volume/cost analysis is dependent on the population base used and the associated rate of increase or decrease Obviously the defense would like to use the last ten years (and they did); the plaintiff would prefer a more representative alternative Possible factors affecting the historical growth and decline rates are (1) migration to and from the city for economic opportunities, (2) errors in the data, (3) the gradual decline in the quality of the water through time, among others There are a myriad of possible explanations for the ups and downs in population growth rate and in situations where no clear-cut reason emerges, what's an economic expert to do? Again, a possible solution is to make benchmark calculations using a reasonable set of parameter values and let the jury decide on the appropriate action

In the scenarios that have been used for calculating the economic loss the population variable has been varied over the following four values a decline of one percent per year, no increase and no decrease, one-half of one percent increase per year, and one percent increase per year

5 Increases in the Real Cost of Water

A number of studies have noted that our water supplies are diminishing at a significant rate People contacted at the National Water and Wastewater Rate Survey, and the American Water Works Association, indicated that while water rates have been keeping pace with the rate of inflation, they were concerned about the increases in certain areas and were beginning to collect data that would allow the estimation of the real costs of water However they were not able to currently offer any help on the problem of estimating the real cost increases of water

It has been conjectured that there will come a time when the cost of a barrel of water will exceed the cost of a barrel of oil While it is certainly not the intent of this paper to enter such a debate, it is apparent that the cost of replacement water is not going to decrease As groundwater levels decease, populations increase, we continue to expand the land under irrigation, and sources of pollution continue to diminish our water supply, the real cost of water is going to increase, particularly when the horizons of 50 years, 100 years, and 175 years are considered It is apparent that some factor incorporating the real increase in the cost of water should be included In the calculations that have been made, the true economic increases in the cost of water have been assumed to take on the following values no increase, one-half of one percent per year, and one percent per year

The Economic Damage Presentation

The future water cost presentation at trial centered on the Template, "FACTORS OF DAMAGE CALCULATIONS", and a question-and-answer format of the individual inputs into the Template As the need for supporting data and charts developed from the question-and-answer format, the supporting information was brought into play As each factor was discussed the variability in that factor was explained and reference was made to other calculations that would soon be presented and summarized

Tables 1, 2, and 3 (Exhibits 5-7) were then introduced and carefully considered Table 1 was used to discuss the format of the Tables The first four rows of the Tables delineate values of the factors used in arriving at the replacement costs presented in the lower three-by-four matrix The starting point for consideration of the replacement costs was column 3 of the row labeled 50 in Table 2 This particular value, $5,580,940 agrees with item 15 on the specific application of the FACTORS OF DAMAGE CALCULATIONS template It was then explained that each number in each of the lower matrices was determined in a similar manner using the FACTORS OF DAMAGE CALCULATIONS template

To summarize the calculations, two graphs were introduced, Exhibit 8 and Exhibit 9 Exhibit 8 shows the ranges of replacement costs depicted in column two of each of the replacement cost matrices shown in Exhibits 5, 6 and 7 Exhibit 9 shows the total range of replacement costs for all calculations for each of time horizons of 50, 100 and 175 years A brief reiteration of the factors and why the complex set of calculations was made and presented concluded the plaintiff's damage presentation

Defense Strategies

The defendants employed the following lines of argument

1 Denial of responsibility,

2 That all Cyril had to do was go out and drill another well in a nearby location and they would then have a new water source,

3 The statute of limitations had run because Cyril knew that the aquifer was polluted when they had to move the first wells in the late 1940s,

4 The wrong parties had sued, the water users should have sued, not the Town,

5 The contract for replacement water was for a ten-year period, thus, no claim for damages could go beyond that time period, and

6 The economic analysis was biased and seriously flawed

In response to the plaintiff's economic analysis, the defense employed an economic expert and a demographer The demographer considered the population data and concluded that based on the ten-year decline in population from 1980 to 1990, the population would continue to decline in the future at an average rate of about 1 15 percent per year

Defendants' economist prepared an analysis similar to that of the plaintiff's economist, with the following exceptions

A A lower average annual water usage,

B A larger negative differential between growth and discount rates Defense used the arithmetic average of inflation rates and interest rates for the same period of time as the plaintiff, 1926-1990, but the years from 1942 to 1951 were excluded,

C A range of population decline rates between 1 2 percent and 0 3 percent,

D A spectrum of 5, 10, 20, 30, and 40-year calculations, and no calculations beyond 40 years,

E No real increase in water prices above inflation,

F An adjustment called "Water Quality Avoided Cost" was devised and injected into the analysis

The "Water Quality Avoided Cost" adjustment had essentially the following justification Since the water quality of the replacement water was substantially better than that of the water in use shortly before Cyril was forced to abandon its wells, the recipients of this better water either received the benefits of the higher quality or saved on water softener costs [8] The empirical basis for this adjustment was tied to a survey conducted in the Town of Cyril concerning individual household use of water softeners

Although defendants' economist took a similar approach to the future water cost problem, there were substantial differences in the underlying assumptions and thus the numerical results One set of the defense's assumptions is shown in Exhibit 10 By far, the single largest difference is the adjustment made for the "water quality avoided cost "[9] As

[8] Aside from the fact that the degradation in water quality was a result of the aquifer being polluted in the first place, if defendants' logic was extended, the Town and/or its water users should be entitled to recover damages for the degraded water quality along with the increased costs for water softening over the years

[9] This factor, according to the defense, reduced the total annual excess cost of replacement water by about 90% For example, defendants' economist projected that Cyril's 1994 excess cost of replacement water was $5,853 49 It is interesting to note, however, that Cyril's actual cost of replacement water for the years 1991-1993 were respectively, $96,482 10, $104,278 18, and $105,984 48, and for 1994 would be considerably higher due to increased usage

determined by the defense, this factor amounts to $73,938, and was based on "saved" water softening costs [10] These costs were based on the theoretical amount of salt needed to reduce water hardness of the polluted water to a comparable hardness of the replacement water Although the defense was able to achieve a 90 percent reduction in the replacement cost of water with this factor, had there not been errors in these calculations, the saved water softening costs would have actually exceeded 100% [11] The original water quality of the aquifer was superior to the replacement water quality On the basis of a comparison of already polluted water from the aquifer and the replacement water, an adjustment in the cost of future water use was being asserted Under some of the scenarios calculated by the defense this lead to a damage with a negative value This is turn, implies that essentially, although not explicitly stated by the defense, Cyril actually gained from the pollution of its water supply

Overview And Resolution

As noted earlier, the resolution of this case came with a settlement agreement put in place at about two weeks after the trial had started and shortly after the close of the plaintiff's case The case was filed in May of 1991 and ultimately resolved in November of 1994 In that period, what appeared to be a huge setback for the plaintiff came when a federal judge granted the defendants' summary judgment based on the statute of limitations argument This action was appealed and the Tenth Circuit Court of Appeals overturned the decision Certiorari was ultimately denied by the United States Supreme Court

Near the end of the plaintiff's case, one of the plaintiff's experts had a heart attack in court while testifying This had a very disruptive effect on the case presentation It may have also played a role in the settlement of the case Of course, the defense raising its settlement offer to a level the plaintiff could live with certainly had a big impact in the resolution Plaintiff's counsel, while accepting the client's decision to settle the case, regretted not having the opportunity to cross examine the defense economic witness concerning the implications of the "Water Quality Avoided Cost" adjustment

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Haydon, Randall B , and Samuel C Webb, "Selecting the Time Period Over Which the Net Discount Rate is Determined for Economic Loss Analysis," *Journal of Forensic Economics,* No. 2, Spring/Summer 1992, 137-47

Ibbotson, Roger G and Rex A Sinquefield, *Stocks, Bonds, Bills and Inflation 1990*

[10] Saved water softening costs were determined from a survey of 100 Cyril water users conducted by the defense See Exhibit 11

[11] Defendants' economist used an incorrect unit cost for salt and extracted an incorrect frequency for adding salt from the Culligan source data Had correct values been used, the saved water softening costs would have exceeded the unadjusted annual cost of replacement water causing the annual excess to be a negative value

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Exhibit 1

FACTORS OF DAMAGE CALCULATIONS

1	AVERAGE ANNUAL RESIDENTIAL USAGE:
2	AVERAGE ANNUAL COMMERCIAL USAGE:
3	AVERAGE ANNUAL TOTAL USAGE:
4	PERCENT ADJUSTMENT:
5	AVERAGE ANNUAL ADJUSTED TOTAL USAGE:
6	COST PER 1000 GALLONS:
7	COST PER BASE VOLUME:
8	LESS SAVED COSTS:
9	FINAL BASE WATER COST PER YEAR:
10	BASE WATER COST:
11	DISCOUNT DIFFERENTIAL:
12	NUMBER OF YEARS:
13	PERCENT CHANGE IN POPULATION PER YEAR:
14	PERCENT CHANGE IN WATER PRICE PER YEAR:
15	P.V. OF FUTURE WATER COSTS FOR STATED NUMBER OF YEARS:

Exhibit 2

TOWN OF CYRIL–MONTHLY VOLUME OF WATER USED (x 1000 gal)

YEAR	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	TOTAL
1982	4528	5234	5110	5151	5931	6788	8707	7757	6109	5484	5028	5508	71335
1983	5150	4726	4768	4980	5415	5479	8114	10701	9947	8082	5120	7332	79814
1984	8037	5377	5918	6336	7771	7985	9225	8914	6221	4508	4308	4426	79026
1985	4570	4396	4672	4567	5140	5034	6192	7479	5235	4678	4584	4822	61369
1986	4824	4441	5788	5170	5224	5050	7559	6226	4394	4612	4444	4569	62301
1987	4505	4051	4370	4714	4712	5356	7250	9062	5339	5051	4677	6178	65265
1988	5011	5198	5375	5197	5993	6943	7996	7786	6546	5165	4579	5672	71461
1989	5213	4714	5052	4169	5682	5441	6396	5379	4941	5574	3365	3823	59749
1990	4595	4562	5197	4692	5087	5976	5592	5417	5699	5554	5410	4844	62625
1991	3556	4043	4097	4033	4539	4312	5573	4948	4018	4538	3955	4542	52154
1992	5034	4163	4333	4640	4164	4526	5321	4519	5057	5018	4403	5190	56368
1993	4500	3933	4846	4379	4123	5106	5724	5524	5258	4571	4677	5147	57288
1994	4718	4735	6148	5739	5866	8084	7244	8899	7676				59109
AVG 1985-93	4645	4389	4859	4618	4963	5305	6345	6260	5165	4973	4455	4976	60953

EXHIBIT 3

MISCELLANEOUS EXPENSES

	1987-1990	1991-1993	
VEHICLES	$3,159	$5,430	
EQUIPMENT	$8,400	$5,617	
ELECTRICITY	$7,523	$1,055	
LEASES	$1,400	$800	
POSTAGE	$998	$1,099	
MISC	$21,479	$14,001	$7,478 = SAVED EXPENSES

CHANGES IN COSTS

PERSONNEL	$51,745	$61,996
MISCELLANEOUS	$21,479	$14,001
WATER		$130,745
TOTAL	$73,224	$206,742

Exhibit 4
Cyril Population

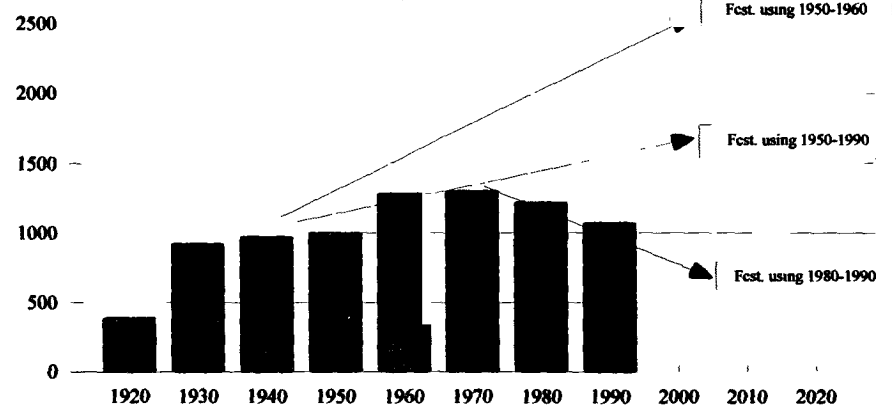

Exhibit 5

SUMMARY OF REPLACEMENT COSTS CALCULATIONS

SCENARIO 1

INITIAL WATER COST PER YEAR - - - -		123,267	123,267	123,267	123,267
DIFFERENTIAL OF INFLATION AND INTEREST RATES - - -		-0 014	-0 014	-0 014	-0 014
ECONOMIC PRICE INCREASES / YEAR - - -		0	0	0	0
POPULATION CHANGE RATE/YEAR -		-1 0%	0 0%	0 5%	1 0%
NUMBER OF YEARS		REPLACEMENT COSTS			
	50	3,621,786	4,454,035	4,972,992	5,577,676
	100	4,704,536	6,654,931	8,126,301	10,110,488
	175	5,090,792	8,058,036	10,831,582	15,368,531

Exhibit 6

SUMMARY OF REPLACEMENT COSTS CALCULATIONS

SCENARIO 2

INITIAL WATER COST PER YEAR - - - -		$123,267	$123,267	$123,267	$123,267
DIFFERENTIAL OF INFLATION AND INTEREST RATES - - -		-0 014	-0 014	-0.014	-0 014
ECONOMIC PRICE INCREASES / YEAR - - -		0 005	0 005	0 005	0 005
POPULATION CHANGE RATE/YEAR -		-1 0%	0 0%	0 5%	1 0%
NUMBER OF YEARS		REPLACEMENT COSTS			
	50	$4,003,234	$4,972,992	$5,580,940	$6,291,810
	100	$5,538,980	$8,126,301	$10,122,022	$12,853,159
	175	$6,267,702	$10,831,582	$15,397,673	$23,225,961

Exhibit 7

SUMMARY OF REPLACEMENT COSTS CALCULATIONS

SCENARIO 3

INITIAL WATER COST PER YEAR - - - -		$123,267	$123,267	$123,267	$123,267
DIFFERENTIAL OF INFLATION AND INTEREST RATES - - -		-0 014	-0 014	-0 014	-0 014
ECONOMIC PRICE INCREASES / YEAR - - -		0 01	0 01	0 01	0 01
POPULATION CHANGE RATE/YEAR -		-1 0%	0 0%	0 5%	1 0%
NUMBER OF YEARS		REPLACEMENT COSTS			
	50	$4,444,434	$5,577,676	$6,291,810	$7,129,679
	100	$6,629,632	$10,110,486	$12,853,159	$16,658,806
	175	$8,014,546	$15,368,531	$23,225,961	$37,289,907

Exhibit 8
Summary of Replacement Costs, Three Scenarios

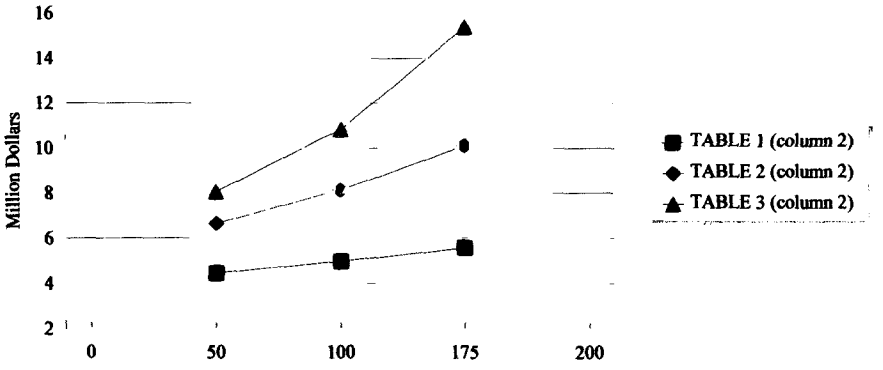

Exhibit 9
Range of Estimates, For 50, 100 and 175 Year Periods

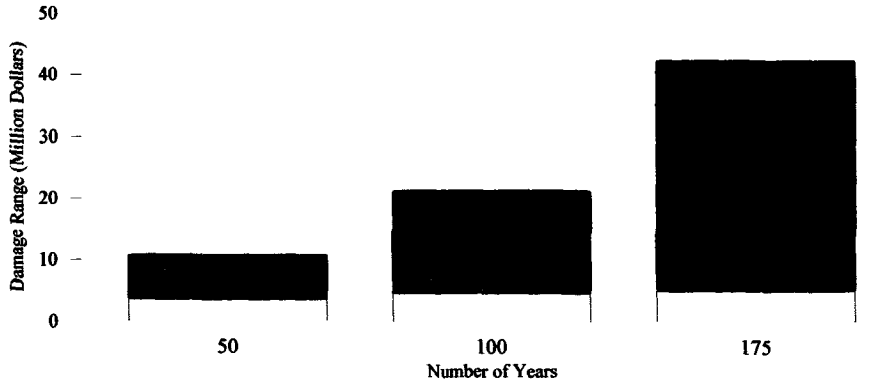

EXHIBIT 10

CITY OF CYRIL DAMAGES ANALYSIS
Caddo County RWD #3 - Wenk Population Forecast and including Out of Town Customers

Assumptions

Volume of water used (000's)	1991 1992 1993 1994	47,329 46,136 45,983 47,225	(1)	For 1991-93 the volume is the actual metered usage +10% for unmetered use For 1994 and all future periods usage is the average 1990-93 metered usage +10% for unmetered use
Purchase Price		$1 85	(2)	Contract price per 1,000 gallons of water with Caddo County RWD #3
Total annual purchases	1991 1992 1993 1994	$87,558 71 $85,352 47 $85,067 66 $87,365 39	(3)	Usage in (1) multiplied by the price in (2)
Amortized		$ 1,095 65	(4)	The cost of the physical connection to Caddo County RWD #3 is $13,473 89 for Connection Cost Cyril This cost is amortized over a 30 year useful plant life at a 30 year municipal bond rate of 7 09% at 1/2/91 The amortization is added to the annual cost and ends 1/2/21
Cyril's direct avoided cost	1991 1992 1993 1994	$ 7,910 21 $ 8,854 21 $ 8,674 21 $ 8,679 54	(5)	Expenses that Cyril no longer suffers since it is purchasing water instead of pumping water from wells There are three types of avoided cost Electric, Pump Service and Leasing
Water quality		$73,928 00	(6)	The value of the improved quality of the purchased water for 573 active avoided cost customers
Total annual excess costs	1991 1992 1993 1994	$ 6,816 14 $ 3,665 90 $ 3,561 09 $ 5,853 49	(7)	Purchases (3) less avoided costs (5), and the value of the improved water (6)
Population	1990-95 1990-00 1990-05 1990-10 1990-15 1990-20 1990-25 1990-30	- 0 4772% - 0 5123% - 0 4824% - 0 3737% - 0 3705% - 0 3625% - 0 3536% - 0 3262%	(8)	Population growth rates based on the following population data provided by growth DeeAnn Wenk for her Average Forecast 1990 = 1,072, 1995= 1,047, 2000 = 1,018, 2005 = 997, 2010 = 995, 2015 = 977, 2020= 961, 2025 = 947 and 2030 = 941
Increase in real price of water only		0 0%	(9)	No real increase in water prices above inflation

EXHIBIT 10 (cont)

CITY OF CYRIL DAMAGES ANALYSIS
Caddo County RWD #3 - Wenk Population Forecast and including Out of Town Customers

Interest rate (R)	5 58%	(10)	Average of arithmetic interest rate from 1926-1993, excluding 1942-1951
Inflation rate (I)	2 82%	(11)	Average of arithmetic inflation rate from 1926-1993, excluding 1942-1951
Real discount rate [(1+I)/(1+R)]-1	-2 61%	(12)	The real discount rate calculated as {[1+(11)]/(1+(10)]}-1

Cumulative Discounted damages at	5 Years	$ 31,921 43
	10 Years	$ 56,943 19
	20 Years	$ 97,029 40
	30 Years	$126,362 20
	40 Years	$144,453 33

EXHIBIT 11

RESULTS: SURVEY OF 100 CUSTOMERS OF CYRIL WATER SYSTEM

Of the 100 customers surveyed 9 (9%) said they had a water softener at the end of 1990 but no longer had one

Of the 100 customers surveyed 1 (1%)said they did not have a softener at the end of 1990 but did have one currently

Therefore, net 8% (9-1)of the city's customers have no further salt purchase expense, a saving of $136 per year (*a saving of 30 lbs a Week for 52 weeks at $6.99 per 80 lbs or $136 31 per year*) and also have no rental or purchase expenses, a savings of $240 per year (*$20 per Month for 12 months = $240*)

Of the 100 customers surveyed 29 (29%) said they have a water softener now

Of the 29 who currently have a softener, 10 (*34 5% of the 29 0% and 10% of the entire sample*) said they have not used supplies in the last 3 Months

Therefore, 10% of the city's customers have no salt purchase expense, a saving of $136 per year (*a saving of 30 lbs a week for 52 weeks at $6 99 per 80 lbs or $136 31 per year*)

Of the 29 who currently have a softener, 15 (*51 7% of the 29% and 15% of the entire sample*) said that they have used supplies in the last three month, an additional 4 (*13 8% of the 29% and 4% of the total sample*) did not know if they were currently using supplies (*we will assume they are*)

Therefore, 19% of the city's customers have reduced salt purchase expense, a savings of $104 per year(*a savings of 23 lb a week for 52 weeks at $6 99 per 80 lb or $104 5 per year*)

Using 1990 data the city of the cyril's water hardness was 840 Mg/liter and the average customer used approximately 223 gallons of water per day

In 1991 the usage was still approximately 213 gallons per day, but The water hardness is only 154 mg/liter

Using the 1990 water quality data on the supply usage chart provided by culligan water conditioning, the 1990 salt usage would have been to add 5 lbs of salt six times per 6 day period (week) or an annual total of 1560 lbs 80 lb bags of softening salts cost $6 99 in cyril This would result in a total salt supply cost of $136 31.

Using the 1991 water quality data on the supply usage chart provided by culligan water conditioning, the 1991 salt usage would have been to add 7 lbs of salt once per six day period (week) or an annual total of 364 lbs. 80 lb bags of softening salts cost $6 99 in cyril. This would result in a total salt supply cost of $31 80.

The differential in cost is $104 51 ($136 31-$31 80) This differential in cost is applied to the people still using water softeners to calculate their savings from reduced salt usage, and is used as a proxy for the monetary value of the improved quality of the water to all customers on the system

TAXATION OF DAMAGE AWARDS: CURRENT LAW AND IMPLICATIONS

Tyler J. Bowles and W. Cris Lewis*

Introduction

Congress, as part of the Small Business Job Protection Act of 1996,[1] has apparently settled the ambiguous issue of when damages are excludible from gross income by amending section 104(a)(2) of the Internal Revenue Code. Previously, this section stated that an exclusion from gross income was allowed for "the amount of any damages received (whether by suit or agreement and whether as a lump sum or as periodic payments) on account of personal injury or sickness." The *Small Business Job Protection Act* amends this section by allowing an exclusion for "the amount of any damages (other than punitive damages) received (whether by suit or agreement and whether as lump sums or as periodic payments) on account of personal physical injuries or physical sickness." Hence, this law, which became effective with the President's signature on August 20, 1996, does not allow an exclusion for punitive damages or for compensatory damages not connected with a physical injury. Heretofore, in some instances, punitive damages and compensatory damages associated with nonphysical injuries (e.g., emotional distress, sexual harassment, discrimination) were excludible.

Forensic economists need to be familiar with the taxation of damages in personal injury and employment cases to appropriately calculate the amount of compensatory damages needed to make the person whole, to write reports that explain the tax implications implicit in these calculations, and to converse intelligently with attorneys regarding the strategy of a case. To understand the current law and its intent, a discussion of previous law is necessary.

Previous Law

Historically, damages received under nontort and noncontract claims have presented ambiguous tax-treatment[2]—namely amounts received based on one or more of the discrimination acts: *Civil Rights Act of 1964*, *Civil Rights Act of 1991*, *Age Discrimination in Employment Act*, *Fair Labor Students Act*, and *Americans with Disabilities Act*. In *U.S. v. Burke*,[3] the Supreme Court first made an attempt to clarify the applicability of IRC Sec. 104(a)(2) to the discrimination acts. This ruling indicated that compensatory damages[4] received from claims based on a statute that allowed for a broad range of remedies (similar to the remedies available under tort law) would be excludible under Sec. 104(a)(2) (see Wells

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[1] Public Law No. 104-188, Sec. 1605.

[2] Compensatory damages arising from the tort claims of personal injury or wrongful death have been clearly excludible under IRC Sec. 104(a)(2). Conversely, compensatory damages from a contract claim have clearly fallen outside the scope of this section.

[3] *U S v Burke*, 69 AFTR 2d 92-1293.

[4] The *Revenue Reconciliation Act of 1989* (Public Law No. 101-239) had made punitive damages received after July 10, 1989 excludible only when received in connection with cases involving physical injury or sickness.

[1996]). Subsequent to this ruling, the Internal Revenue Service issued Revenue Ruling 93-88, that provided that amounts received under post-1991 Civil Rights actions for intentional discrimination are excludible under Sec. 104(a)(2).

Apparently not satisfied with its first attempt to solve the problem, the Supreme Court heard another discrimination case, *CIR v. Schleier*.[5] Here the court ruled that compensatory damages received under the *Age Discrimination in Employment Act* were not made excludible by Sec. 104(a)(2). This decision, and the subsequent suspension of Rev. Ruling 93-88 by the IRS, left the damage award taxation issue confused. Now, Congress has stepped in and imposed what appears to be rather unambiguous guidance.

Current Law

The *Small Business Job Protection Act* makes punitive damages not resulting from a personal physical injury subject to federal income taxes.[6] Apparently to help define what is a personal physical injury, this law also adds the following new sentence to IRC Sec. 104(a)(2): "For purposes of paragraph (2), emotional distress shall not be treated as a physical injury or physical sickness."[7] The intent of this law appears to be clear: an exclusion will not be allowed for damages received under any of the discrimination acts or torts involving nonphysical injuries such as emotional distress and injury to personal or business reputation.

Implications for Damage Calculations

If the legal framework allows,[8] the economist needs to calculate an amount that will leave the person whole. Most economists are familiar with the appropriate model applied to calculating lost wages in personal injury suits: an award is needed that will provide for an immediate withdrawal to replace past lost wages, future withdrawals to replace future after-tax lost wages, and future withdrawals to pay the income taxes imposed on interest earnings of the award. This procedure appropriately focuses on replacing after-tax lost wages since, in personal injury cases, the award itself (not the interest it subsequently generates) is nontaxable. Given the new tax law imposing taxes on awards in discrimination cases, it would appear appropriate to calculate damages as in personal injury cases with the only change being a shift of focus away from replacing after-tax wages to replacing gross wages. This approach, however, would be incorrect as shown below.

Since the income tax liability on a series of future periodic payments is different than the tax liability on a lump sum equal to the present value of that series of payments, the focus

[5] *Commissioner v. Schleier*, 75 AFTR 2d 95-2675.

[6] A remaining ambiguity is what portion, if any, of compensatory damages in discrimination suits is subject to the FICA tax.

[7] See Public Law No. 104-188, Sec 1605.

[8] Federal law and IRS regulations notwithstanding, forensic economists remain constrained by judicial practices and guidelines. For example, state courts in Utah have essentially directed that damages in tort actions be computed without considering tax implications even though the actual tax effects could be significant. See Lewis and Bowles (1996).

ought to be on replacing after-tax wages. In discrimination suits, an amount is needed that will provide for the following: (1) an immediate withdrawal to replace past lost wages; (2) an immediate withdrawal to pay the income tax imposed on the award; (3) future withdrawals to replace future after-tax lost wages; and (4) future withdrawals to pay the income taxes imposed on the interest earnings of the award.

The following example will illustrate. Assume that in a violation of the *Americans with Disabilities Act*, a person is terminated who would have earned $40,000 annually for the next five years, and that the appropriate discount rate is 6 percent. Further, assume that there is an average tax rate of 10 percent on income of $40,000 and 20 percent on income of $140,000 or more.[9] A simple (but incorrect) approach would be to assume that since the award is taxable, and future wages would have been taxable, that taxes can be ignored and, hence, the loss is simply the present value of the future gross wages. Using this approach, the award intended to make the person whole is $178,605. However, this amount would leave the person under compensated as Table 1 illustrates. Had the person not been terminated, they would have had $36,000 of after-tax income available in each of the future five years. An award that equals the present value of future lost gross wages is inadequate in that it only provides $13,452 of after-tax income in year five.

The correct approach is to first calculate the present value of future after-tax lost wages, which, in this instance, is $160,743 (i.e., the present value of five future payments of $36,000 discounted at 6 percent), and then "gross-up" this amount to pay the initial tax imposed on the award. This "gross-up" procedure is complicated by the fact that every time the award is increased to account for taxes, the tax liability also is increased. Fortunately, there is a simple mathematical solution to this problem. The appropriate award, A, can be calculated as:

$$A = w/(1 - t),$$

where w is the present value of future after-tax wages, and t is the average tax rate on a lump sum equal to w. Here, A would equal $200,928. As illustrated in Table 2, the award now fully compensates the victim of discrimination.[10]

[9] We are ignoring past lost benefits, tax on interest earnings, and other issues in order to concentrate on the effect of a progressive tax system on calculating damages in a discrimination suit.

[10] No further damage calculations are necessary where an amount is awarded for punitive damages. While such an award is taxable, it essentially is a windfall to the recipient and is unrelated to the actual losses suffered.

Conclusion

The *Small Business Job Protection Act of 1996*, that became law on August 20, 1996, effectively limits the exclusion from gross income available under IRC Sec 104(a)(2) to compensatory damages received on account of personal physical injuries or sickness In discrimination suits, therefore, the forensic economist needs to focus on calculating an amount that will not only fund past and future lost after-tax wages and taxes on interest income, but also will pay the tax on the award itself

Table 1. Annual Withdrawals Available from an Award Based on Future Gross Wages

Period	Beginning Balance of Award Fund	Interest Earnings	Withdrawal	Ending Balance of Award Fund
1	$178,605	—	$71,721[a]	$106,884
2	106,884	6,413	36,000	77,297
3	77,297	4,638	36,000	45,935
4	45,935	2,756	36,000	12,691
5	12,691	761	13,452	—

[a] This amount equals the sum of a withdrawal to pay income taxes on the award ($35,721 = 0 2 x 178,605) and a withdrawal to replace the after-tax lost wages of period one ($36,000 = $40,000 - 0 1 x $40,000)

Table 2. Annual Withdrawals Available from an Award Based on Future After-Tax Wages and "Grossed-Up" for the Tax on the Award

Period	Beginning Balance of Award Fund	Interest Earnings	Withdrawal	Ending Balance of Award Fund
1	$200,928	—	$76,186[a]	$124,742
2	124,742	$7,485	36,000	96 227
3	92,227	5,774	36,000	66,001
4	66,000	3,960	36,000	33,962
5	33,962	2,038	36,000	—

[a] This amount equals the sum of a withdrawal to pay income taxes on the award ($40,186 = 0 2 x $200,928) and a withdrawal to replace after-tax lost wages of period one of $36,000)

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Accounting for Medicare, Social Security Benefits and Payroll Taxes in Federal Cases: Federal Case Law and Errors by Many Forensic Economists

Paul C Taylor and Thomas R Ireland*

Introduction

Since *Norfolk and Western Railway Company v. Liepelt*,[1] it has been clear that income taxes should be deducted from personal injury losses in federal cases This was strongly affirmed in *Jones & Laughlin Steel Corp. v. Pfeifer*,[2] and is no longer an issue in either FELA (Federal Employers Liability Act) or Jones Act maritime cases While these U S Supreme Court decisions are explicit that "income taxes" include both federal and state income taxes, the Court has left the interpretation of what that term constitutes to the lower courts What is not explicit in those cases is the appropriate treatment of municipal income taxes and payroll taxes that are also levied against personal incomes of individuals In *Pfeifer*, the Court was also explicit that lost fringe benefits should be considered, but not which "lost" fringe benefits However, there are federal cases in which the lower courts have been quite explicit about both the inclusion of payroll taxes and the proper way to consider certain federally mandated fringe benefits We have found that many forensic economists are not aware of this body of case law and are, correspondingly, making major errors in federal case reports of loss that include the elements of payroll taxes and lost fringe benefits

In this paper, we provide description of published court decisions that have addressed both payroll taxes and the impact of death or injury on diminution of Social Security and Railroad Retirement benefits In a number of maritime cases, federal circuit courts have ruled that all payroll taxes are income taxes within the meaning of *Liepelt* and *Pfeifer* A second group of cases, including three cases by the United States Supreme Court, have stated that reductions in Social Security Benefits are noncontractual and should not be included as a part of lost income We also discuss one FELA case suggesting that there may be a different requirement for Railroad Retirement benefits, but still held that it is specifically invalid to use employer tax payments to the Railroad Retirement Board as a proxy for lost benefits by an injured worker.

In our practices, we frequently see reports by forensic economists that do not make deductions for employee paid payroll taxes, and that treat employer paid payroll taxes as a lost fringe benefit Such treatments fly in the face of the case law we describe Further, the one FELA case we discuss introduces the "doctrine of curative admissibility " That doctrine suggests, in Missouri at least, that a forensic economist who commits the error of using employer Social Security or Railroad Retirement tax payments as a proxy for lost fringe benefits, may allow the defense to introduce Social Security or RRB disability payments into evidence to "cure" the earlier inappropriate admission of invalid claims of loss In other words, the economist's mistake may create an exception to the collateral source rule, allowing the jury to be informed about disability payments received by the injured party

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[1] 444 US 490, 62 L 2d Ed 689, 100 S Ct 755 (1980)

[2] 462 US 523, 76 L Ed 2d 768, 103 S Ct 2541 (1983)

This paper consists of four parts (1) A brief discussion of payroll taxes, (2) A review of federal case law suggesting that payroll taxes should be deducted from loss estimates, (3) A review of federal case law suggesting that social security benefits are too speculative to be considered in loss estimates, and (4) A discussion of *Adams v. Burlington Northern Railroad Co.*[3] , suggesting that the standards in FELA and Jones Act cases involving Railroad Retirement Board taxes and Social Security taxes, respectively, may differ. *Adams* also introduces the legal doctrine of "Curative Admissibility," which may be important in the consideration of fringe benefits

The Meaning of Payroll Taxes

Virtually all working individuals pay some form of payroll tax on "earned" as opposed to "unearned" income The most common forms are OASDHI (Social Security and Medicare) and Tier I and Tier II Railroad Retirement taxes (by employees of railroads)[4] Less common types of payroll taxes are "city income taxes" imposed by some municipalities,[5] and state unemployment and disability taxes imposed by some states Our specific focus in this paper is on OASDHI and Tier I and Tier II taxes of the Railroad Retirement system. Payroll taxes are defined as a percent of income received from earnings, up to some maximum, except for Medicare and some city income taxes, which have no annual limit

The term "payroll tax"should be understood as an income tax that exempts all forms of "passive income." Passive income exempted from taxation includes interest, royalties, rents, dividends, capital gains, and so forth Payroll taxes, unlike other income taxes, typically do not start with a basic exemption, so that their percentages apply to the first dollar of income Because payroll taxes reach a maximum, they are correctly considered to be quite regressive as taxes although the benefits they fund can be very progressive in nature, thus meeting an apparent overall goal of income redistribution In fact, this overall progressivity is one of the primary reasons why the courts have ruled that employer contributions are not a valid proxy for lost employee benefits, as will be discussed below

Payroll taxes are treated as income taxes in all Public Finance textbooks[6] and all analysis made of the impact of payroll taxes treat them as a special type of income tax Thus, while payroll taxes were not specifically mentioned in *Liepelt* or *Pfeifer*, we argue that their inclusion was clearly implied by the reference to income taxes And, as we will show, that is how the courts, following *Liepelt* and *Pfeifer*, have ruled

[3] 865 S W 2d 748 (Mo App W D 1993)

[4] Tier I of Railroad Retirement tax is designed as a perfect analog to FICA It includes Medicare taxes of railroad workers and retirement/disability taxes that are identical to Social Security taxes The percentages allocated for Medicare, disability insurance and retirement insurance and the income maximums on which these taxes are levied are identical to those in FICA taxes, which combine Social Security and Medicare taxes

[5] St Louis, Missouri, is one example of a "city income tax" that is a payroll tax, but we have not surveyed cities to determine the frequency of this type of tax

[6] See Edgar G Browning and Jacqueline M Browning, *Public Finance and the Price System*, MacMillan Publishing Company (1994) and Randall G Holcombe, West Publishing Company (1996) In models analyzing incentive effects of payroll taxes, income is normally the dependent variable, as is the case with analysis of other income taxes

Federal Cases Requiring Subtraction of Employee Payroll Taxes

This section offers a series of citations to federal decisions (two appellate and one trial) in which the courts have ruled explicitly that payroll taxes should be subtracted in economic loss computations

In *Madore v. Ingram Tank Ships, Inc.*, 732 F 2d 475 (1984), the U.S. Court of Appeals, 5th Circuit at 478 said

> In computing the loss of future earnings, gross earnings should not be used Unless the amounts the worker would have been required to pay in income taxes and social security taxes is negligible or should, for some articulated reason, be disregarded, the lost income stream must be computed after deducting the income taxes and social security taxes the worker would have paid had he continued to work, for he is entitled only to be made whole for what he has lost, his net income *Culver 1*, 688 F 2d at 302

In *Pickle v. International Oilfield Divers, Inc.*, 791 F 2d 1237 (1986), the Court of the Fifth Circuit, again dealt specifically with omission of a reduction for social security taxes by the plaintiff's economic expert and at 1241 wrote

> IOD correctly argues that the district court erred in not deducting social security taxes from its estimate of Pickle's future income

In *Purdy v. Belcher Refining Company,* 781 F Supp 1559 (S D Ala 1992), the Southern District, Alabama, U S District Court at 1562 noted

> The Purdys agree that from base earnings federal, state and social security taxes amounting to 16 3% should be deducted.

We also cite Thomas J. Schoenbaum's *Admiralty and Maritime Law, 2nd ed.* West Publishing 1994 (p 205) as follows

> Social Security taxes which would have been paid on wages are also properly deducted from the award

There are two important elements in these citations First, all three cases and Thomas J Schoenbaum's legal treatise fall within the realm of admiralty law, whose economic damage calculations flow directly from *Pfeifer* Second, we could find no published decision from any federal court dealing with any form of admiralty or other federal law that explicitly considered the question of payroll taxes and ruled that payroll taxes should not be subtracted We found no FELA cases which specifically addressed payroll taxes paid by employees, but since the Jones Act is essentially FELA applied to seamen, it is reasonable to surmise that appellate courts applying FELA standards would react in the same manner described here for Jones Act cases We also note one important instance

(*Trevino v. U.S.*[7]), where a circuit court found the Supreme Court's economic directives in *Pfeifer* compelling enough to broaden its applicability to include FTCA (Federal Tort Claims Act) actions

Cases Disallowing Claims to Future Social Security Benefits

This section lists both federal and state decisions that suggest that social security benefits, particularly including those stemming from employer paid Social Security taxes, should not be treated as a compensable lost fringe benefit.

In *Fleming v. Nestor*,[8], the United States Supreme Court discusses Social Security at length and wrote [9]

> Of special importance in this case is the fact that eligibility for benefits, and the amount of such benefits, do not in any true sense depend on contribution to the program through payment of taxes
>
> The Social Security system may be accurately described as a form of social insurance, enacted pursuant to Congress' power to "spend money in aid of the 'general welfare,'" whereby persons gainfully employed, and those who employ them, are taxed to permit the payment of benefits to the retired and disabled, and their dependents ..
>
> It is apparent that the noncontractual interest of an employee covered by the Act cannot be soundly analogized to that of the holder of an annuity, whose right to benefits is bottomed on his contractual premium payments
>
> (the Social Security) program was designed to function into the indefinite future, and its specific provisions rest on predictions as to expected economic conditions which must inevitably prove less than wholly accurate, and on judgements and preferences as to the proper allocation of the Nation's resources which evolving economic and social conditions will of necessity in some degree modify
>
> To engraft upon the Social Security system a concept of "accrued property rights" would deprive it of the flexibility and boldness in adjustment to ever-changing conditions which it demands

In *Richardson v. Belcher*,[10] citing *Fleming v. Nestor*, the Court wrote [11]

[7] 804 F 2d 1512 9th Cir 1986

[8] 363 US 603, 4 L ed 2d 1435, 80 S Ct 1367 (1960)

[9] at 4 L Ed 2d 1443-1444

[10] 404 US 78, 30 L Ed 2d 231, 92 S Ct 254 (1971)

> In our last consideration of a challenge to the constitutionality of a classification created under the Social Security Act, we held that "a person covered by the Act has not such a right in benefit payments as would make every defeasance of 'accrued' interests violative of the Due Process Clause of the 5th Amendment" The fact that social security benefits are financed in part by taxes on an employee's wages does not in itself limit the power of Congress to fix the levels of benefits under the Act or the conditions upon which they may be paid *Nor does an expectation of public benefits confer a contractual right to receive the expected amounts* (emphasis added)

In *Weinberger v. Wiesenfeld*, the Court restated [12]

> We held in Flemming that the interest of a covered employee in future social security benefits is "noncontractual," because "each worker's benefits, though flowing from the contributions he made to the national economy while actively employed, are not dependent on the degree to which he was called upon to support the system by taxation"

Drawing upon these three Supreme Court decisions, the California Court of Appeal, First District, Division 2, in *In re Marriage of Nizenkoff*,[13] reasoned (135 Cal Rptr at 191):

> Further, Congress, which has recognized the need for vested pension rights in the private sector, has, in the intervening 26 years since *Fleming*, retained section 1304 of the Social Security Act This inaction, in the face of legal trends toward vested rights, only serves to confirm the court's view that the social security system is essentially different from other benefit and insurance programs and still needs the flexibility provided by section 1304

In *Farquharson v. Travelers Insurance Company*,[14] the Court of Appeals of Michigan ruled (at 488) that

> plaintiff seeks compensation because his employer's federal Social Security tax payment on his wages was terminated after he left work An employee's interest in such payments is too speculative for it to be considered "income." Despite our recognition that plaintiff's inability to work probably affected his eventual entitlement to Social Security

[11] 30 L Ed 2d at 234

[12] 420 US 636, 43 L Ed 2d 514, 95 S Ct 1225 (1975) at 43 L Ed 2d 523

[13] 65 Cal App 3d 136, 135 Cal Rptr 189 (1976)

[14] Mich App , 329 N W 2d 484 (1982)

> benefits, we conclude that the employer's tax is not "income" to the employee under section 3107(b).

The Alaska Supreme Court in *Mann v. Mann*[15] cited *Nizenkoff* and wrote:

> Unlike social security, an employee has an absolute contractual right to receive SBS benefits. (social security is a scheme of social insurance which significantly differs from ordinary deferred compensation plans)

In *Jenkins v. Kerr-McGee Corporation*,[16] the Court of Appeal of Louisiana, Third Circuit at 1103 wrote

> The trial court correctly deducted income taxes from the gross past lost wages amount It is well settled that an award for lost wages under general maritime law should be based on after tax earnings The trial court erred, however, in adding employer FICA contributions to the net past lost wages amount The worker is entitled to be made whole for what he has lost, i e , his net income--what he would have received had he continued to work *Madore v. Ingram Tank Ships, Inc.*, 732 F 2d 475 (5th Cir 1984). In other words, the lost income stream must be computed after deducting income taxes and social security taxes the worker would have paid had he continued to work It is erroneous to thereafter add back the employer FICA contributions, which essentially represent the employer's half of contributions to the social security fund in the name of the worker These payments, based upon a percentage of the gross amount paid to the worker, go directly from the employer to the federal government The worker has no right to receive the resulting benefits until retirement or disability Jenkins would not have directly received these payments as part of his income had he continued to work Therefore, the employer contributions were not "lost" to him

Though not presented here, the *Jenkins* court cited *Culver v. Slater Boat Co. (Culver II)*

> 722 F 2d 115 (5th Cir 1983) (en banc) *cert. denied* 467 US 1252, 82 L Ed 2d 842, 104 S Ct. 3537 (1984) for its authority and reiterated at 1104 in its discussion of lost future wages that including employer FICA contributions in the computation of fringe benefits was "clearly erroneous "

The cases cited here all concern Social Security and represent a variety of types of federal litigation, as well as state litigation that applies principles set down by the federal

[15] 778 P 2d 590 (1989) at 592

[16] 613 So 2d 1097 (1993)

courts relating to Social Security The last case we cite in this section *Adams v. Burlington Northern*[17] is one that does not involve Social Security, but rather the Railroad Retirement System In one sense, *Adams* appears to go against the cases previously cited in that it states a method by which economic experts should proceed to properly value the reduction in employer railroad retirement payroll taxes made by an employer on behalf of an employee because of an injury In another sense, however, it may be partially or fully confirming a distinction made in the cited cases between private pensions and Social Security benefits Tier II of the Railroad Retirement System is much more like a true private pension program than is Tier I or Social Security It may be that the existence of Tier II is what explains the difference between *Adams* and the cases previously cited

Railroad employers and employees make payments into two "Tiers" of the Railroad Retirement System Tier I is exactly identical to OADSHI (Social Security and Medicare) The rates are the same, the maximum amounts of income on which taxes are paid are the same, and the benefit formulas are the same This concurrence of systems is a result of federal legislation designed to bring about this symmetry of programs But Tier II is a system in which the amounts of employer tax payments contributed on a worker's behalf have a more direct impact on the benefit amount that the worker eventually receives, in a manner similar to a private pension program The formula is different Employers pay 16 1 percent, while employees pay 4 9 percent The maximum amount of income on which the tax is paid is different from Tier I and Social Security At the same time, Tier II has, like Social Security, functioned largely as a "pay as you go" system and, like Social Security, the Railroad Retirement System, with respect to both Tier I and Tier II, is not subject to the pension requirements of ERISA for private pensions

Whether this explanation is valid, or is simply speculation on our parts, the Court, in *Adams*, at 751 wrote

> The plaintiff, through the expert testimony, added all the tax payments defendant would have made to the Railroad Retirement Account if plaintiff had continued working until retirement Plaintiff claims this is the correct measure of damages due to the "actuarial nature" of the railroad retirement system, arguing that because the Railroad Retirement Board must fund benefits with revenues, there is a correlation between revenues and benefits Any link between the taxes paid and the benefits is too tenuous to provide a true measure of plaintiffs loss
>
> The statute describes the method for computing retirement benefits The formula is set out in 45 U S C § 231b(b) To determine the plaintiffs lost retirement benefits, one should simply apply the formula in order to arrive at two numbers (1) the amount plaintiff would have been entitled to if he had continued to work until age 66, and (2) the amount plaintiff will actually be entitled to The difference between the two amounts, discounted to present value, represents plaintiffs lost benefits Plaintiffs evidence, upon proper objection, would not have been admissible

[17] 865 S W 2d 748 (Mo App W D 1993)

> *Therefore, this requirement of the the curative admissibility doctrine is satisfied* (italics added)

Adams v. Burlington Northern and the "Doctrine of Curative Admissibility"

The *Adams* case is also very interesting from another perspective *Adams* carries an implication that, at least in Missouri, an error in how a plaintiff's economist computes losses of an injured employee may create a damaging admissibility to a jury of evidence that an injured employee is receiving disability payments from either Social Security or from the Railroad Retirement System This is the meaning of the last two sentences in the Court's opinion in the above citation The *Adams* court was saying three things that are important (1) that employer payroll tax payments to the Railroad Retirement Board on behalf of the plaintiff are not a valid measure of benefits lost to the plaintiff, (2) that, unlike the court rulings involving Social Security discussed above, the Court did not believe that the estimate of the impact on benefits was too noncontractual to be included, and could be calculated from the formulas existing in current law, and, (3) the court at 751 specifically stated that the doctrine of curative admissibility could have been validly invoked by the defendant, had the defendant done so correctly

The *doctrine of curative admissibility* is an extremely important exception to the collateral source rule that has major implications in the context of this case for calculations of lost fringe benefits The issue at hand was that the defendant would normally have been prevented from presenting evidence that the plaintiff was receiving disability payments from the Railroad Retirement System by the collateral source rule However, in this case, the plaintiff's expert economist had introduced invalid evidence by claiming the loss of employer paid Tier I and Tier II taxes in the employee's name as lost income This meant that the defendant may have been able introduce evidence of the employee's disability payments for the sole purpose of showing that the employee had not suffered a loss in the amount claimed by the plaintiff In other words, because the economic expert for the plaintiff had invalidly introduced the amount of the employer's Tier I and Tier II taxes that would have been paid on the employee's behalf, the defense may have had the right to introduce evidence that the employer had been receiving disability payments to "cure" the plaintiff's introduction of invalid evidence

In *Adams*, the defendant had not made a proper reference to the collateral source rule or the curative admissibility doctrine at the trial court level and the Court of Appeal ruled against the defendant But the Court of Appeal went out of its way at 751 to state clearly that the doctrine did apply to the circumstances of the case On this matter the Court wrote

> (The doctrine of curative admissibility) allows a party to answer inadmissible evidence introduced by the opposing party with similar inadmissible evidence if its introduction would remove any unfair prejudice caused by the admission of the earlier inadmissible evidence In order for the doctrine to come into play, the following requirements must be met the earlier evidence must have been inadmissible. *Id.:* it must not have been objected to when offered *Id:* the rebutting evidence is needed to remove an unfair prejudice which might otherwise ensue from the original evidence.

> The curative evidence, i e , that plaintiff would receive disability income from the time of the accident until his retirement date, must be of the same type or character as the earlier inadmissible evidence Phoenix Redevelopment, 812 S W 2d at 886 Defendant argues that the admission of the disability benefits will show that plaintiff is receiving some benefits from the fund and, therefore, did not lose the entire amount of defendants contribution Whether this cures the earlier testimony or is of the same type or character and thereby admissible rests to a great extent within the discretion of the trial court *Elliott v. Mid-Century Ins. Co.*, 701 S W 2d 462, 466 (Mo App.1985) We are not prepared to say that the court abused its discretion in denying the offer of proof It was within the trial courts discretion to refuse the evidence

The Court went on to make it clear that a big part of the problem was that the defendant had not included the doctrine of curative admissibility at the trial court level and that the burden of proof for making such arguments rests with party offering the evidence to explain the proper grounds for its admission (at 752)

> Granting the trial court discretion is particularly significant under the unique rules of evidence argued here The defendant made alternative arguments to the court, one in which it claimed that the proffered evidence was admissible as an exception to the collateral source rule and the other in which it acknowledged that the offered evidence was inadmissible Under these circumstances, it is necessary that the court understand not only what evidence was being offered, but also the theory of its evidentiary admissibility We have carefully reviewed the defendants offer of proof and find no reference to the collateral source rule or the curative admissibility doctrine or any description that comes close to those two theories of admissibility The only identification made is the argument that exclusion of the evidence of disability payments will result in double damages This characterization does not sufficiently inform the trial judge In order to avoid trial court error and to enable the court to rule intelligently, the burden is on the party offering the evidence to explain the proper grounds for its admission This is particularly so where the proffered evidence, as here, is normally inadmissible

We want to be careful not to overstate the potential applicability of this doctrine in states other than Missouri, or to imply what tests need to be met in other states for this doctrine to apply Nevertheless, *Adams* carries the implication that incorrect calculations of a lost fringe benefit by an economist may open a damaging admissibility of evidence of disability payments to an injured worker by the defense This fact alone suggests that forensic economists need to become more aware of relevant case law

Conclusion

Since this has been a descriptive paper, there is no need for a summary of the information provided We will, however, restate our underlying premise that many forensic

reports we have seen in widely differing areas of the United States do not properly account for the legal requirements described in this paper. As economists and not attorneys, we are not ultimately responsible for legal interpretations about what is and what is not permissible under the law But if we are to hold ourselves out as experts, we need to stay current and be well versed in the structure imposed by statute, case law, and court customs that affect our calculations Where the law is concerned, the final determination must be left to the employing attorney, but our clients will be better served if we know enough about the law to ask the right questions

Estimating Hours of Lost Household Production Using Time Use Data: A Caution

Daphne T Greenwood*

Introduction

In compensation for wrongful death or injury, the valuation of household production plays an increasingly important role Full-time homemakers are recognized as providing services of economic value to their spouse and children Even men and women who are engaged in market work still perform significant amounts of home production While market earnings must be adjusted for the probability of unemployment in any one year, and for eventual retirement, nonmarket production is likely to increase in the event of unemployment or of lessened labor force participation The economic value of this work is greater than a comparable hour of market work because it is not subject to taxation

The Latest Time Use Study from Cornell

Since it is difficult to estimate reliably the time any one individual spent or will spend in household production, many forensic economists use data from nationally recognized time use surveys to provide proxy estimates The most recent of the "Cornell studies" uses data from the *Time Use Longitudinal Panel Study* collected by the Survey Research Center at the University of Michigan (Juster, et al , 1988) Family members kept diaries of time use over twenty four hours on four separate occasions during 1975 which varied as to day of the week and season of the year A subsample of husband-wife families were reinterviewed in 1981 No more recent studies of detailed time use are available, although the studies published by Cornell attempt to update the dollar values associated with these hours

The economic theory of the household posits that paid market work and unpaid (but still productive) household work compete for the time of the housewife, or other household member. The greater the share of time allocated to paid work, the less will be spent in unpaid work, *ceteris paribus.* In keeping with the theory, when results for any of these studies are presented in tabular form, average hours worked in the household by women are always separated for women employed outside the home and those not so employed (Often, there are intermediate categories for levels of part-time employment)

The tabular results reported in the most recent edition of the Cornell studies are consistent with past studies in showing more housework when children are present and less housework when more hours are worked outside the home Median minutes per week of household work is reportedfor married males and married females, by age of child, number of children, and number of hours employed per week[1] However, when the analysis is extended by reporting multiple regression equations economic theory seems to be forgotten The *concept* of reporting coefficients estimated on variables such as age, education, and number and age of children is excellent Changes in the hours of household production for an individual over their lifetime as these variables change could be predicted in a continuous fashion, within some margin of error, by such an equation

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[1] Bryant, Zick, and Kim, pp 3-5

Problems with the 1993 Cornell Results for Women

However, while the concept is good its implementation falls short The most glaring deficiency is that the reported equation for married women's household production contains no variable measuring time spent in the labor force!The economic theory of the household tells us that hours worked in the labor market is a critical determinant of hours spent in household production, along with number and age of children Its omission calls the accuracy of all other coefficients into serious question, not to mention the predictive power of the equation Interestingly enough, the wage earned in the labor market *is* part of the model used to predict married men's household work, although hours worked is not

There are numerous other problems with the value and sign of the estimated coefficients As can be seen below, in the equation estimated by Bryant, Zick, and Kim from the University of Michigan data, [2] the large positive coefficient on the age-squared variable (offset in the early years by a negative coefficient on age) implies that the older a woman gets the more housework she will do This does not seem plausible It may be a result of the fact that the sample did not include women over sixty-five, or of the omitted variable problem With life expectancies increasing into the early eighties for many women, a reliable method of estimating the household production of older women would be very helpful to forensic economists, who must now make arbitrary assumptions about the hours of work performed by these individuals

(1) TIMEF = 3770 59 + 8676 UNEARN + 521 69 UND3 - 94 2772 AGEF + 1 23 AGEFSQ
(911 55) (5 26) (98 17) (42 56) (0 48)

- 46 93 EDF + 199 83 FAMGT3 - 235 87 OWN - 7.22 URBAN - 651 78 BLACK
(20 29) (40 94) (187 82) (99 76) (265 06)

where standard errors are listed in parentheses and the variables are

TIMEF =	estimated minutes per week spent by married woman on household work
UNEARN =	after tax annual nonwage (or nonsalary) income of family in thousands of dollars
UND3 =	number of children age three or younger in the family
AGEF =	age in years of the married woman
AGEFSQ =	AGEF squared
EDF =	years of education completed by the married woman
FAMGT3 =	number of family members older than three in the family
OWN =	dummy variable equalling 1 if family owns home
URBAN =	dummy variable equalling 1 if in a city of 50,000 or more population
BLACK =	dummy variable equalling 1 if married woman is black

The regression for all maried women has an adjusted R- square value of 18 and a standard error of estimate of 801 69 Only home ownership, nonwage income, and urban/rural status are not signficant at the 05 level However, given the omitted variable problem, the validity of all the coefficients should be seriously questioned

[2] Bryant, Zick, and Kim, p 6-7

Problems with Estimates Based on Racial Background

The dummy variable for being black has a statistically significant negative coefficient, leading to a lower estimate of lost household production for a black woman with the same years of education, number of young children, etc. However, forensic economists should avoid using the lower estimates of housework done by black housewives as the basis of an estimate for a black plaintiff for several reasons.

First, there were a very small number of blacks in the sample -- only 14 in 1981). Second, the use of a readily identifiable characteristic which has no theoretical basis is always highly questionable. For example, if tall housewives were found to perform fewer hours of housework on average than were short housewives, an economist would hesitate to use the height of an injured party as a partial determinant of their economic loss. Lack of theoretical justification suggest that there is either an omitted variable which explains the difference, or that the difference is due to sampling error. Given the flaws in this study either could be true but no theoretical reason for accepting the lower estimate based on race alone has been given, and it is difficult to imagine one.

Conclusion

Time-use diaries and the resulting estimates of household production are a valuable resource to economists. However, given the problems with the estimating equations used in the most recent Cornell publication, use of the medians seems the only prudent solution and racial breakouts are inappropriate and invalid. There is a need for more studies which incorporate the effect of women's labor market activity on their household work and which deal with the household work of the older woman.

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