

11 ECONOMIC DAMAGES AT TRIAL

- 11.1 Introduction
- 11.2 Voir dire
 - A. Plaintiff
 - B. Defense
- 11.3 Opening statements
 - A. Plaintiff
 - B. Defense
- 11.4 Direct examination of economic expert
 - A. General
 - B. Checklist of questions
 - C. Testimony demeanor and style
- 11.5 Cross examination of the economic expert
 - A. General
 - B. Checklist of possible questions
 - C. Other tactics
- 11.6 Redirect examination
- 11.7 Closing arguments
 - A. Plaintiff
 - B. Defense
- 11.8 Use of economist by defense
- 11.9 Summary
- Appendix 1 Sample economic testimony

11.1 Introduction

The most pure and theoretically elegant economic loss analysis is of no use unless it can properly be explained to a jury. The ability of the economic expert to communicate with a judge and jurors is the acid test of his worth, and his reputation as being effective in testimony increases the likelihood of settlement. On the other hand, defense counsel who are knowledgeable in the economics of damages can successfully attack areas of weakness in economic loss estimates and, in the extreme, destroy the credibility of the economic expert.

This chapter explores each step of a trial in which economic damages may be relevant. It offers suggestions, checklists, and examples based upon both our experience and structured interviews with successful plaintiffs' and defense attorneys with whom we have worked. Sample testimony covers directly measurable categories

of damages, such as lost wages and fringe benefits, and less directly measurable elements of damages, such as household services and the lost pleasure of life.

11.2 Voir Dire

A. Plaintiff

Plaintiffs' attorneys generally state that the liability side of the case will be more important than the damages side as a consideration in jury selection. This might be reversed, for example, when the liability seems to be clear and very large economic damages are to be advanced. At any rate, plaintiffs' attorneys do give consideration to the proof of damages as a jury is selected.

A common approach is to choose one or a few jurors who will lead the others toward a verdict on damages and, in leading, will not be afraid to think in terms of high losses, if these have been established. Given the search for "leaders," what kind of juror does the plaintiff's attorney seek or avoid—as either a leader or follower?

There seems to be some consensus among trial lawyers on the plaintiff side about "types" of persons to be sought or avoided. As a general rule, jurors are sought who can understand, at least to some extent, economic estimates and testimony. Yet, some high-education-level and also high income persons are avoided, because it is thought that they will tend to be very conservative and not award large sums for the lost earning power, especially of hourly wage earners.

More specifically, plaintiffs' attorneys tend to favor blue-collar workers who "get their hands dirty" and know what happens to earning capacity when a person is injured. Union members are also looked upon favorably. Bankers, accountants, engineers, scientists, and high income persons in general may be avoided.

It is less certain what type of juror would be most sympathetic to hedonic damages estimates of the lost pleasure of living; very little experience exists as a guide. Women who are mothers, grandmothers, and/or wives may be more responsive to claims for the lost pleasure of life and the loss of society and companionship, especially if the victim was married or was a child. Perhaps prospective jurors thought to be conservative in their outlook would also respond cautiously to less direct measures of damages.

Finally, potential jurors may be asked if they would hesitate to award \$750,000—or whatever is the "bottom line" of the economist—if the facts led to this amount as the true economic loss. They might be asked if they believe that lost household services are a loss to the family and if they know that persons are commonly hired to perform household services. They might be asked if they believe that a human life has a value beyond its value as a mere economic machine, both in the world of work and in the services provided for a family.

B. Defense

Defense attorneys, as might be expected, tend to favor those types of potential jurors which plaintiffs' attorneys avoid. They feel that those in "conservative" occupations and perhaps high-income persons in general will tend to resist very high awards. Some defense attorneys also state that they lean toward jurors over age 50, under the assumption that older persons are more conservative.

11.3 Opening Statements

A. Plaintiff

We are told by experienced trial attorneys on the plaintiff's side that in opening statements there are generally two objectives related to the coming testimony of the economic expert: first, to briefly lay the groundwork for the testimony of the economist; and, second, to get the jury interested in what the economist will say. The plaintiff's attorney might simply tell the jury that they will hear from a noted economic expert and in a sentence overview his or her qualifications. The jury might be told that the expert is knowledgeable as to how wages, employer contributions to fringe benefits, interest rates, and other values combine to produce a lump sum award which will exactly restore what the deceased or injured laborer would have earned.

If testimony over hedonic damages will occur, the plaintiff's attorney may say that the economist will testify to more than the economic value of the deceased as a worker and provider of home services. He may state that surely no one would argue that a person killed on his or her day of retirement has no value. The economist, he might say, will apply the results of many studies of the value of a human life—by government agencies, private research groups, and economists—to the case of this deceased person and his family.

Furthermore, some plaintiffs' attorneys will tell the jury the "bottom line" lump sum loss to which the economist will testify. This both lays groundwork and generates interest. A caution in doing this, whether in voir dire or an opening statement, is that the plaintiff's side does not wish to appear unduly "greedy" early in the case, before liability has been established. For this reason, some plaintiffs' attorneys will not lay out a "bottom line" until the economist actually presents it in testimony.

B. Defense

A defense attorney may wish to open the door for a coming attack on weaknesses in the techniques or estimates of the economic expert. A danger is that this alerts the economist as to questions which should be anticipated in cross examination. (The same drawback exists for extensive questioning of the plaintiff economist in depositions.) Thus, the defense attorney may only refer to the testimony of the economist by using generalities to ridicule or cast aspersions on the testimony to come. He may refer to hedonic damages as a new and unexplored area, with wide ranges of economic estimates that show the inaccuracy and speculative nature of such claims. He may say that no specific relationship will be shown to exist between so-called hedonic losses and the individual characteristics of the deceased.

Defense attorneys also may wisely choose to make no mention of this portion of the case, or to simply point out that testimony on damages is irrelevant if there is no liability. In fact, the strength or weakness of the liability portion of the case may be the guiding factor in the extent to which damages are discussed.

11.4 Direct Examination of Economic Expert

A. General

The overriding rule for the plaintiff's attorney and economic expert is that economic

testimony must be made as straightforward and understandable as possible. This may appear obvious and easy to follow at first blush, but economists have tendencies to complicate rather than clarify issues, and lawyers sometimes don't put in the preparation time which is necessary on how the economist can most effectively say what he has to say. The court system does not set prerequisite courses in economics for jurors. It is the attorney and economist who must tailor the method of presentation to the jury, not the jury which must bone up on principles of economics.

For this reason, the following line of questioning may usefully be employed toward the end of direct examination:

- Q.** Professor Economist, you've explained how many complicated factors—wage growth rates, fringe benefits, discounting to present value, and so on—produce your \$500,000 estimate of lost earning capacity. Couldn't you get about the same answer by taking Mr. Green's \$26,000 in earnings in the last full year before his death and multiplying this by his 21 years of future working life? Couldn't the jurors do such a multiplication, themselves?
- A.** Yes. Because wage growth rates and interest or discount rates come close to offsetting each other in this particular case, your simple method would be less than 10 percent different from my estimate and it would be almost 10 percent higher than my estimate.

Because of the overriding desire for simplicity, many plaintiffs' attorneys want crisply moving testimony by their economist, consuming no more than 30–45 minutes. This can be effectively accomplished in most situations. Other plaintiffs' attorneys are not concerned about the total time of direct examination *per se*. Rather, they wish to ensure that the economist can hold the interest of the jury throughout his testimony, having them understand what he says to the maximum extent possible and trusting that he knows what he is talking about. This is, again, why the selection of an expert is so critical. In the best case, the economist relates to the jury as a well prepared and effective teacher, and jurors assume the role of students who are guided and enlightened by what the economic expert says.

B. Checklist of Questions

Checklist 1 provides possible questions to be asked the economic expert in direct examination. Also, Appendix 1 provides a complete sample testimony with direct, cross, and redirect examination. This testimony is based upon the Jack Doe illustrative case, which has been carried through previous chapters.

Some elaboration on the checklist may prove helpful. For example, the series of questions on qualifying the forensic economist may be especially important when another economist is scheduled to testify for the defense, and a "battle of experts" may ensue. Even if the opposing economist is experienced in the forensic specialty, he or she may not be as qualified or experienced in the emerging sub-specialties of forensic economics which are relevant to the particular case. The person may not be a labor economist, for example, with a good background or publications in wage and fringe benefit matters; or, the case may highlight issues in costs of care, work-life expectancy, hedonic damages, or commercial damages. The plaintiff's

attorney obviously should lay any groundwork for the relative qualifications of his expert versus the defense expert.¹

Question #2 is not terribly relevant but its purpose is to allow the experienced economic expert to provide a "down-to-earth" answer, establish eye contact with the jury, and begin to build rapport with the jurors. The next question lays the foundation for the "bottom line" estimate and may be especially important in state courts. The written reports of economic experts should list these major facts and assumptions so that the list can be read or at least paraphrased, and the foundation for expert opinions thereby established. We have found that the review of facts and assumptions can also serve to give jurors an overview of calculation issues and methods, as demonstrated in Appendix 1. The jurors are then hearing new terminology for the second time in the answer to Question #5.

The fourth question is designed to present the "bottom line" estimates to the jury early in testimony. At this point, a blown-up chart may be presented which depicts the bottom line estimate(s), can be kept before the jury, and will be introduced as an exhibit. The strategy is to lay out these numbers early, then simply explain how they were produced, then reiterate the numbers, and then, perhaps, to anticipate questions in cross examination.

Some economists, in answer to Question #5, will provide a table-by-table explanation of each calculation table in the written report. We think that such a presentation scheme is unnecessarily cumbersome and time-consuming. As demonstrated in the Appendix 1 sample testimony, the same result can be effectively accomplished by placing before the jury enlargements of one or two of the calculation tables. Usually, most of the explanation for the entire analysis can be accomplished with reference to the calculation table for future wage or salary loss. Jurors learn what it means to "Teeter, Totter, and LPE."

The plaintiff's attorney is probably less likely to err, and reduces stress on himself, by asking the open-ended Question #5 and giving the forensic economist freedom to talk it through. However, the attorney plays an important role as a listener and pacer. If the economist begins to talk over the head of the jury or talk too fast, for example, the attorney must intervene with specific questions. He or she should have an agreement with the economist to interrupt with such questions as "Slow down" or "Could you explain that again so that I can understand it?"

Question #6 is the wrap-up (especially in the absence of hedonic testimony) focusing again on the lump sum estimates of loss already in front of the jury on a blown-up chart. Particularly if there is a range of loss estimates, from a low to a high based upon alternative assumptions, the economist should offer an opinion as to which is the most accurate. This will be based upon facts regarding the injured or deceased party. In a minor child case, with alternative earnings estimates for a deceased child as a high school or college graduate, the economist may admit that "only God knows" where the child would have ended up in the range, but

¹ Also, see Dennis A. Suplee and Margaret S. Woodruff, *Direct Examination of Experts*, THE PRACTICAL LAWYER (December 1987), pp. 53-60; and Suplee and Woodruff, *Cross Examination of Expert Witnesses*, THE PRACTICAL LAWYER (January 1988), pp. 41-53.

that at least a minimum and a possible maximum have been established. Another example is when the economist has shown in his summary table a “continuous employment” estimate through life expectancy and a lower estimate with LPE reductions for average persons. The economist may help the jury narrow down the range of loss by discussing the fact, if it is true, that the “P” and “E” track record of the deceased in his past was considerably above average for that range of ages.

CHECKLIST 1

FOR DIRECT EXAMINATION OF ECONOMIC EXPERT

1. Qualify expert: education; publications; teaching; consulting; past experience in loss estimation and testimony.
2. What is economics and how is it relevant to this case?
3. What major facts and assumptions were used to produce loss estimates in this case?
4. What is your estimate of lost earning capacity and other economic losses in this case?
5. In more detail, please tell us how you arrived at your final estimates of economic losses.
6. Just so we are clear, what is your best estimate of the present value of loss of earning capacity and lost household services in this case?
7. (Anticipated defense questions and/or closing arguments on damages.)
8. Please explain how you estimated the lost pleasure or value of living, apart from lost earnings and household services.

In Question #7 or a series of such questions, the plaintiff’s attorney may anticipate questions to be asked later by the defense. In our opinion, an absolutely misleading but intuitively appealing “best defense question” is as follows:

Q. Professor Economist, isn’t it true that if Mr. Green’s family were given \$913,213 today, they could invest this in U.S. government bonds and earn 10% interest, or over \$90,000 in interest earnings? Couldn’t they earn \$90,000 this year and next year and every year and still have the \$913,000 principal amount remaining when Mr. Green would have retired or died? And wouldn’t you be providing \$90,000 in the first year of alleged loss when Mr. Green would have earned only \$25,000 in wages and fringe benefits?

Note that the above is how the defense might rightly state their “best” question either in cross examination or in closing argument after the economic expert has departed. Some defense attorneys might add, “Wouldn’t \$250,000 at 10% interest restore the \$25,000 loss and still the \$250,000 would remain?” The disadvantage here is fixing a bottom sum, however misleading.

The plaintiff’s attorney and economist can attempt to dispose of this issue in direct examination by talking through Table 1 and Table 2 for a sample Walter Green case. For simplicity, this example does not separate wages from fringe benefit earnings nor explicitly deal with work-life expectancy. In a summary Table 1 for Walter Green, earnings are Teetered and Tottered through life expectancy, and the focus is upon the present value of earnings in each future year. These are added

TABLE 1
WALTER GREEN
PRESENT VALUE OF EARNINGS
1985-2033

Year	Age	Earnings	Discount Factor	Present Value	Cumulate
1989	30	\$25,000	1.0000	\$25,000	\$ 25,000
1990	31	25,250	0.9804	24,755	49,755
1991	32	25,503	0.9612	24,513	74,268
1992	33	25,758	0.9423	24,275	98,540
1993	34	26,016	0.9238	24,034	122,574
1994	35	26,276	0.9057	23,798	146,372
1995	36	26,539	0.8880	23,567	169,939
1996	37	26,804	0.8706	23,336	193,275
1997	38	27,072	0.8535	23,106	216,381
1998	39	27,343	0.8368	22,881	239,262
1999	40	27,616	0.8203	22,653	261,915
2000	41	27,892	0.8043	22,434	284,349
2001	42	28,171	0.7885	22,213	306,562
2002	43	28,453	0.7730	21,994	328,556
2003	44	28,738	0.7579	21,781	350,337
2004	45	29,025	0.7430	21,566	371,903
2005	46	29,315	0.7284	21,353	393,256
2006	47	29,608	0.7142	21,146	414,402
2007	48	29,904	0.7002	20,939	435,341
2008	49	30,204	0.6864	20,731	456,072
2009	50	30,505	0.6730	20,530	476,602
2010	51	30,810	0.6598	20,328	496,930
2011	52	31,118	0.6468	20,127	517,057
2012	53	31,429	0.6342	19,932	536,989
2013	54	31,743	0.6217	19,735	556,724
2014	55	32,060	0.6095	19,541	576,265
2015	56	32,381	0.5976	19,351	595,616
2016	57	32,705	0.5859	19,162	614,778
2017	58	33,032	0.5744	18,974	633,752
2018	59	33,362	0.5631	18,786	652,538
2019	60	33,696	0.5521	18,604	671,142
2020	61	34,033	0.5412	18,419	689,561
2021	62	34,373	0.5306	18,238	707,799
2022	63	34,717	0.5202	18,060	725,859
2023	64	35,064	0.5100	17,883	743,742
2024	65	35,415	0.5000	17,708	761,450
2025	66	35,769	0.4902	17,534	778,984
2026	67	36,127	0.4806	17,363	796,347
2027	68	36,488	0.4712	17,193	813,540
2028	69	36,853	0.4619	17,022	830,562
2029	70	37,222	0.4529	16,858	847,420
2030	71	37,594	0.4440	16,692	864,112
2031	72	37,970	0.4353	16,528	880,640
2032	73	38,350	0.4268	16,368	897,008
2033	74	38,734	0.4184	16,205	\$913,213
WALTER GREEN		\$913,213			

to produce a present value loss estimate in the Green case of \$913,213. The companion Table 2 begins with this present value payout of \$913,213, adds interest earnings each year, subtracts the necessary earnings replacement payouts in each year, and dramatically shows that \$0 remains at the end of the period.

Perhaps an even better approach involves the preparation for each case of a special graph that refutes this “best defense question.” Such a graph is shown as Chart 1 accompanying the sample testimony in Appendix 1 at the end of this chapter for the Jack Doe case.

When hedonic testimony is to be offered, we recommend that it be last. The recommended answers to a “best defense question” also apply to hedonic calculations, and this can simply be stated before turning to hedonic testimony. Hedonic testimony is not held until the end because it is relatively new. Rather, it involves another dimension of loss resulting from death or serious injury that can be calculated. We now turn to the value of a human being beyond his or her value as an economic machine. A transition into this testimony might occur as follows:

Q. Professor Economist, did you also estimate the value of the life of Mr. Green beyond lost wages and household services?

A. Yes, I also estimated the loss of the value of life itself. This is a value separate and apart from lost earnings and household services. I relied upon a large body of academic literature regarding what we as a contemporary American society are willing to pay to prevent loss of life. The estimates provided by these studies range rather broadly. I base my estimate on a benchmark value of approximately \$2.7 million for the value of a statistically anonymous life. I adjusted this value for the age, race, and sex of the deceased.

Some economists will also use an enlargement such as Table 1 from Chapter 9 to show a range of total life values from several economic studies. The rule is still to be straightforward and efficient in such testimony, which is shown for the Jack Doe case in Appendix 1.

C. Testimony Demeanor and Style

The appropriate demeanor of an economic expert in testimony is probably no different from that of an engineer or medical doctor or any other expert witness. However, one does not receive “demeanor in testimony” training, or anything close, in a doctoral program. A few comments may therefore be helpful to both the attorney and the economist.

Each of us has a style of appearance and presentation with which he is comfortable in public situations. Experts may be more or less effective in testimony given their natural style, but it is what it is. Efforts to improve upon one’s past methods of presentation may be useful, but the plaintiff’s attorney is not well served to attempt significant personality changes with his economist. Nothing is more painful to watch than an “artificial” witness, who is attempting to be something that he is not.

With the above generality in mind, the expert must exude confidence and experience, without seeming “cocky” or appearing to talk down to the jury. This may be especially important to remember for younger economic experts. Vitality and energy are important to keep the interest of the jury. Both students and jurors go to sleep before a boring teacher. The expert must always be conscious of good

TABLE 2
WALTER GREEN
COMPUTATION OF PAYOUT SCHEDULE SHOWING ELIMINATION
OF LUMP SUM, 1989-2033

Year	Age	Starting Lump Sum	Lump Sum Earnings	Lump Sum	Earnings Payout	Ending Lump Sum
1989	30	\$913,213	\$0	\$913,213	\$25,000	\$888,213
1990	31	888,213	17,764	905,977	25,250	880,727
1991	32	880,727	17,615	898,342	25,503	872,839
1992	33	872,839	17,457	890,296	27,758	864,538
1993	34	864,538	17,291	881,829	26,016	855,813
1994	35	855,813	17,116	872,929	26,276	846,653
1995	36	846,653	16,933	863,586	26,539	837,047
1996	37	837,047	16,741	853,788	26,804	826,984
1997	38	826,984	16,540	843,524	27,072	816,452
1998	39	816,452	16,329	832,781	27,343	805,438
1999	40	805,438	16,109	821,547	27,616	793,931
2000	41	793,931	15,879	809,810	27,892	781,918
2001	42	781,918	15,638	797,556	28,171	769,385
2002	43	769,385	15,388	784,773	28,453	756,320
2003	44	756,320	15,126	771,446	28,738	742,708
2004	45	742,708	14,854	757,562	29,025	728,537
2005	46	728,537	14,571	743,108	29,315	713,793
2006	47	713,793	14,276	728,069	29,608	698,461
2007	48	698,461	13,969	712,430	29,904	682,526
2008	49	682,526	13,650	696,176	30,203	665,973
2009	50	665,973	13,319	679,292	30,505	648,787
2010	51	648,797	12,976	661,763	30,810	630,953
2011	52	630,953	12,619	643,572	31,118	612,454
2012	53	612,454	12,249	624,703	31,429	593,274
2013	54	593,274	11,865	605,139	31,743	573,396
2014	55	573,396	11,468	584,864	32,060	552,804
2015	56	552,804	11,056	563,860	32,381	531,479
2016	57	531,479	10,630	542,109	32,705	509,404
2017	58	509,404	10,188	519,592	33,032	486,560
2018	59	486,560	9,731	496,291	33,362	462,929
2019	60	462,929	9,259	472,188	33,696	438,492
2020	61	438,492	8,770	447,262	34,033	413,229
2021	62	413,229	8,265	421,494	34,373	387,121
2022	63	387,121	7,742	394,863	34,717	360,146
2023	64	360,146	7,203	367,349	35,064	332,285
2024	65	332,285	6,646	338,931	35,415	303,516
2025	66	303,516	6,070	309,586	35,769	273,817
2026	67	273,817	5,476	279,293	36,127	243,166
2027	68	243,166	4,863	248,029	36,488	211,541
2028	69	211,541	4,231	215,772	36,853	178,919
2029	70	178,919	3,578	182,497	37,222	145,275
2030	71	145,275	2,905	148,180	37,594	110,586
2031	72	110,586	2,212	112,798	37,970	74,828
2032	73	74,828	1,497	76,325	38,350	37,975
2033	74	37,975	759	38,734	38,734	\$0

eye contact with the jurors, not the attorneys, and he or she must use this eye contact to perceive whether the message is getting across.²

11.5 Cross Examination of the Economic Expert

A. General

Many general tactics are available in cross examination. The defense attorney may ask no questions and ignore the expert, especially if liability is in serious doubt. Or he may attempt to make the calculations seem so complex or absurd as to be unbelievable—especially when inflation has been left in the analysis and very high annual wage estimates result. Or he may attack assumptions, techniques, or outright errors, and past chapters have suggested such possible lines of assault.

B. Checklist of Possible Questions

Checklist 2 provides a checklist of possible questions, or lines of inquiry, in the cross examination of the plaintiff's economist. Again, Appendix 1 provides a complete sample text of cross-examination in the Jack Doe case. Some comments on the checklist may be helpful. Items #1 and #2, for example, will probably be of value only if there is some flaw in the qualifications of the expert, or if he can somehow be embarrassed. For example, a vocational expert may be holding himself out as an economist, or vice versa. As another example, did he use his college's computer to perform the calculations without reimbursing the college for this private work?

Item #3 emphasizes the key role of assumptions which could be incorrect. In one case, we saw the report of a plaintiff's economist in which he assumed that 8 percent inflation would be the bare minimum for future years. Unfortunately for him, the first three years of his projection were "Reagan years" and inflation averaged considerably below 8 percent. Moreover, economists will sometimes make assumptions for a plaintiff's attorney but warn him that the assumptions, and therefore the loss estimates, cannot be defended at trial. Therefore, Item #4 should always be asked; surprisingly, it seldom is.

Item #5, like the previous question, may only be useful 10 percent of the time, but a "score" on either of these questions can be devastating. In this case, the economist may have changed his assumptions and perhaps his techniques until he produced a "bottom line" acceptable to the plaintiff's attorney.

The next two questions, or lines of attack, are most appropriate if the defense feels that wage growth rates are too high or interest (discount) rates are too low. If inflation has not been removed from wage growth, wage loss numbers in future years will be so large that the entire estimate can be made to appear ludicrous to a typical juror. Moreover, the "best defense question," outlined in the above section on direct examination, may be asked here, saved to the end of cross examination, or held for closing argument. Even when this question has already been addressed in direct examination, the defense may ask the question anyway. At first blush, it does make a lump sum estimate of loss appear to be too large.

² Also, see the helpful checklist in Gerald Martin, *DETERMINING ECONOMIC DAMAGES* (Santa Ana, California: James Publishing Group, 1988), pp. 160-161.

CHECKLIST 2

FOR CROSS EXAMINATION OF ECONOMIC EXPERT

1. Attack qualifications of expert: Relevance of education, teaching, etc., to estimates; depth of experience, etc.
2. Attack integrity/credibility: Past work predominantly for plaintiff? Past, similar cases with differing methods used? Per diem and annual earnings from this type of work? Use of college resources? Has he advertised his services to attorneys?
3. Emphasize the importance of the many necessary assumptions and attack questionable assumptions. If early estimates, how well do assumptions match economic variables thereafter?
4. Do you agree with the assumptions used?
5. Have you considered, or produced, estimates in this case other than those which show up in your final report? If so, why were they not a part of your final report?
6. Wage earnings base and growth: Projections on earnings history or statistical person? Realistic wage rates times realistic annual hours of work? Wage growth rate too high? Are annual wage earnings in future years unbelievably high?
7. Discounting: Is discount rate unrealistically low? Possibly ask "the best defense question."
8. Work-life: Are "non-LPE" techniques used which result in unrealistically high estimates because of unrealistic assumptions? What if at early age, the deceased/injured would have died, become disabled, lost his job or relevant job skills? Did the person smoke? For any reason, was he "below average" in L, P, or E characteristics?
9. Household services: Are assumed hours of service too high? Does the U.S. government value such hours at all in estimating Gross National Product?
10. Medical or institutional care costs: Attack any high medical inflation rates because of public policy pressures to slow past escalations in cost.
11. Personal consumption: Is the percentage-of-wages deduction unrealistically low, especially for single persons?
12. Income taxes: Perhaps ask expert to explain the extremely complex calculations. Or, make it seem silly that the consideration of income taxes would make the estimates increase.
13. Hedonic damages: Ask if the cited studies valuing safety were primarily designed for valuing life in court cases. Attack any attempt to translate a range of total life values into some "average" value of an unknown life. Ask why the economist has testified so little about hedonic damages versus other damages. Ask if the deceased enjoyed his life less than the average person.

A comment on the household services item (#9) is that the defense may attack the assumed hours of weekly services, especially if they are greater than suggested in the annual Cornell University studies discussed in Chapter 5. The defense should also ask if even the government tries to value household services in the calculation of Gross National Product. The answer is "no," and the implication may be that the government either does not think it has value or cannot properly value it.

The same question may be asked in regard to hedonic loss values, although many government agencies, in one way or another, have calculated total life values.

Item #13 and Appendix 1 also provide lines of inquiry in regard to this category of damages.³

C. Other Tactics

A well-prepared defense attorney will have reviewed past analyses and testimony in similar cases. Consistency in assumptions and technique is a virtue, and inconsistencies are generally grounds for attack. This is true for virtually every element of the work of the economist, which is specifically covered in the above checklist of questions. An inconsistency is grounds for attack especially when it appears that the "new" assumptions or techniques in the case make the loss estimates significantly higher.

We have also seen defense attorneys, as another approach, appear incredulous that the economist was needed. They might show the jury that a similar estimate is obtained by multiplying wages and/or fringes in the first loss year times the remaining years of work-life expectancy. This is an attempt to "take the magic" out of what the economist has done or said. It may well backfire, as the defense has reiterated the "bottom line" number in a simplistic manner.

Finally, the defense attorney in some instances may be wise to ask nothing in cross examination and perhaps to discuss the "best defense question" in closing arguments. This may be true if the plaintiff's economist has been very conservative in his assumptions and techniques. It may also be true if the forensic economist has a reputation for winning more points in cross examination than he or she loses. After all, the defense attorney is taking on the economist in matters of economics, not matters of law.

11.6 Redirect Examination

This is another point at which good knowledge by the plaintiff's attorney about what his economist has done is critical. In cross examination, the economist may have been asked misleading questions, not have been given a chance to fully respond, or otherwise not allowed to keep a clear picture of economic loss in front of the jury. For example, the defense may have ridiculed discounting at, perhaps, a 2 percent real rate of interest when interest on U.S. government securities was currently 8 percent. The plaintiff's attorney must allow the economist to reiterate that inflation was, indeed, removed from the "totter" side of the equation, but the same inflation rate was also removed from the "teeter" side of wage growth.

The plaintiff's attorney may have saved some questions to further clarify or emphasize certain areas of testimony, depending upon the success of cross examination. In the hedonic area, as an example, the plaintiff's attorney may ask the economist to discuss studies which show that the value of life is well in excess of the value of lost earnings. He may wish to have the economist explain how his benchmark figure is conservative for the overall value of life and to explain the difference between speculative damages, a term which refers to the uncertain origin of damages, and the difficulty of damage calculations for the lost pleasure

³ While the article does not refer to hedonic damages, consider the discussion of the "Frye Test" in relationship to hedonic damages: Lee Miller, *Cross-Examination of Expert Witnesses: Dispelling the Aura of Reliability*, UNIVERSITY OF MIAMI LAW REVIEW (March/May 1988), pp. 1073-1099.

of life, which simply involve a less direct measurement technique. He may wish for the economist to carefully explain what personal characteristics of the deceased he can and cannot take into account in making his estimate.

Plaintiffs' attorneys may also save a few conservative assumptions and techniques to reiterate in redirect. They want the jury to be left with the notion that the "bottom line" is conservative, or is at least fair. In general, then, the role of the plaintiff's attorney and economist in redirect is to simplify, clarify, and emphasize.

11.7 Closing Arguments

A. Plaintiff

The plaintiff's attorney will, again, clarify and emphasize the economic loss estimate of the economist. He may point out the conservative nature of the estimate, and he may wish to more-or-less ridicule the attempt by the defense to use the "best defense question" to confuse the accurate consideration of economic losses. In conjunction with this, the "invisible witness" argument may be employed. It would be stated that if the defense could have found a reputable economist anywhere in the country who would contradict the basic techniques of the plaintiff economist, then that other economist would certainly have testified.

The plaintiff's attorney wants a "gold star" from the jury for bringing forth an experienced economic expert as a counselor, or aid, to the jury. Finally, if hedonic estimates are made, the plaintiff's attorney may point out that the economist has separated losses in the victim's role as an economic machine from the lost value of living, itself. Only the jury can adjust value of living estimates for the specific victim. If hedonic estimates have not been made, the plaintiff's attorney may point out that the economist has only captured the injured or deceased person as an economic machine. On top of this estimate, the jury must add elements of loss for pain, suffering, society and companionship, etc. Of course, the nature of the case and legal parameters in the particular jurisdiction will dictate what can be argued here.

B. Defense

Some defense attorneys will not even bring up the issue of damages, because they do not want another reminder of big dollars or because their line of attack is that liability does not exist. If it has not already appeared, the "best defense question" may be effectively utilized, and it may still be effective even if the plaintiff's economist has already raised the issue and attempted to destroy its credibility.

Certainly, it may prove useful to reiterate any errors by the economist, or any "stretching" of a fair estimate via assumptions or techniques. Very high loss estimates may be made to seem an incredible "pipe dream" to the average juror, who probably uses his annual earnings or his savings as a mental "benchmark." On the other hand, experienced defense attorneys know not to attack the unattackable. Otherwise, the last impression of the jury may be that the defense is stretching a fair estimate downward, and the loss estimate of the economist will have even more weight.

Regarding hedonic calculations, the defense attorney may argue that such testimony is new and lacks sufficient foundation and refinement of calculation methods. He

may stress the broad range of results from economic studies on the overall value of a human life. He may not wish to attack, on the other hand, the fundamental notion that human life has a value beyond earning capacity.

11.8 Use of Economist By Defense

The conventional wisdom, with which we agree, is that the defense should use an economist to help him prepare for cross examination of the plaintiff's expert. The defense does not use its economist to testify for two major reasons. First, his testimony may give the whole issue of damages more credibility and importance. It may appear that the defense is very worried about the testimony of the plaintiff's economist. Second, the defense economist may provide, or be forced to provide, his own "bottom line" estimate. The jury might consider this a bare minimum for an award.

Interestingly, a clear trend in the 1980's was the increasing use of forensic economists by the defense to prepare for settlement negotiations and cross examination. In an increasingly specialized world, and with the rapid pace of change in the economics of the law, this should not be a surprise. What is more surprising is that defense economists are testifying more often. If the plaintiff's economist has made errors or blatantly "stretched" an estimate via assumptions or techniques, the benefits of testimony by the defense economist may outweigh the costs. Defense attorneys should also know that in the absence of their own economist at trial, the plaintiff's attorney will score points with the "invisible witness" argument previously discussed.

11.9 Summary

In summary, guidelines, tips, and checklists have been provided for each step in trial which may be relevant to damages. This information is from both our own experience and the experiences of plaintiffs' and defense trial attorneys. Appendix 1 is sample testimony designed to supplement the above.

APPENDIX 1

SAMPLE ECONOMIC TESTIMONY

DIRECT EXAMINATION—DECEASED JACK DOE

(Assume that questions have been asked and answered about Economist's educational and work background).

PLAINTIFF'S ATTORNEY: Professor Economist, please describe your professional articles, books, and papers—especially those that relate to why you are here today.

ECONOMIST: I have published two books in this area. The first, in 1987, was entitled *Economic Damages, the Handbook for Plaintiff and Defense Attorneys*. The second, in 1990, is titled *Economic/Hedonic Damages, the Practice Book for Plaintiff and Defense Attorneys*. I have published two articles in *Trial*, which is a publication primarily read by plaintiff's attorneys, and the lead article in *For the Defense*, which is primarily read by defense attorneys. I have also published related articles in such journals and books as the *Labor Law Journal*, the *Antitrust Law and Economics Review*, and *Commercial Damages*. I have given papers in this area at meetings of the American Economic Association, the Eastern Economic Association, and the National Association of Forensic Economics. In general, my research and publications for the last several years have focused upon the economics of the law and the calculation of economic damages.

PLAINTIFF'S ATTORNEY: Have you ever chaired a session at one of these meetings on valuing economic losses?

ECONOMIST: Yes sir, the Industrial Relations Research Association is the subgroup of the American Economic Association for labor economists and holds its annual meetings in conjunction with the annual meetings of the broader group. In the early eighties, the President of this national group wanted a session, for the first time, on the economic value of a human life. He asked me to organize the session, chair the session, and give a paper at the session, which I did.

PLAINTIFF'S ATTORNEY: Could you briefly describe your activities with the National Association of Forensic Economists and with the National Academy of Economic Arbitrators.

ECONOMIST: I was a charter member of the national group of forensic economists—people like me who attempt to apply economics to courtroom testimony. Since its beginning, I have reviewed articles for publication in the journal of this group—the *Journal of Forensic Economics*. I was also a charter member of the National Academy of Economic Arbitrators in 1989. The forensic economists who are members of this group may be used to arbitrate disputes over the amount of economic damages.

PLAINTIFF'S ATTORNEY: What is the leading source of statistics used in your work?

ECONOMIST: The Bureau of Labor Statistics of the U.S. Department of Labor.

PLAINTIFF'S ATTORNEY: Did staff of that federal agency ever ask you to instruct them?

ECONOMIST: Yes, in 1985, I spoke to these persons at one of their national

meetings about improvements in federal statistics that would enable economists to better use these statistics in economic loss calculations.

PLAINTIFF'S ATTORNEY: Have you previously testified in federal and state courts of this state about economic damages?

ECONOMIST: Yes sir, many times.

PLAINTIFF'S ATTORNEY: Dr. Economist, have you run seminars and given papers to groups of plaintiffs' attorneys, defense attorneys, and economists on the proper calculation of economic damages?

ECONOMIST: Yes sir, approximately 30 such programs and seminars in cities across the country . . . usually at the request of law schools or bar association groups.

PLAINTIFF'S ATTORNEY: Dr. Economist, how much do you work on the plaintiff's side of cases such as this versus the defense side?

ECONOMIST: For the last several years, my work has been split approximately 50:50 between the plaintiff's side and the defense side.

PLAINTIFF'S ATTORNEY: Dr. Economist, what is "economics" and what does that have to do with why you are here today?

ECONOMIST: Economics is the science of dealing with such things as how we produce our goods and services in this country; how we get those goods to market; the prices charged for those goods, which is how much we pay at the grocery store, for example. As a labor economist, I primarily spend my time on such matters as the wages and fringe benefits that workers earn when working, and the probabilities that persons will actually be working at any given time. These are exactly the types of issues that are involved in the calculation of lost earning capacity and related economic losses.

PLAINTIFF'S ATTORNEY: Did I ask you to perform an analysis of economic losses in the case of Mr. Jack Doe?

ECONOMIST: Yes sir, you did.

PLAINTIFF'S ATTORNEY: What major facts and assumptions did you consider in arriving at your conclusions?

ECONOMIST: All of the major facts and assumptions are listed in the first pages of my written report, which I am holding here. To save time, let me try to paraphrase from these pages.

First, Mr. Doe was born on September 11, 1953, so that he was age 35 at his date of death on February 14, 1989. He was a white male, which is relevant because federal statistics on probabilities of living and working are broken down by race and sex.

Second, Mr. Doe was working at his time of death as a journeyman carpenter for the Messer Construction Corporation. He had been a member of the Carpenter's Union for many years and worked at the union hourly rate. This rate is \$16.60 per hour in 1989. My projection of lost earning capacity is based upon Mr. Doe's own wage history for all of those years for which his income tax records were available, the years 1977–1988.

Third, Mr. Doe's lost earning capacity in employer contributions to his fringe benefits—such as a retirement pension—were assumed to be 30 percent. This is based upon legally-required fringe benefit payments, such as social security, and exact employer contributions to the health and welfare fund and retirement fund,

as specified in the union contract. This 30 percent figure is also very consistent with average employer contributions to fringe benefits in the best nationwide survey.

Fourth, I removed the effects of future price inflation—that is, how fast the prices of those goods we buy in the grocery store go up each year—from my analysis. As I will try to show later, future inflation is the largest factor in both wage growth rates, that make these loss estimates go up, and interest or discount rates, that make these numbers go down. This can be seen using the example of a child's seesaw, or teeter-totter, to show how I can remove the effects of future price inflation from both sides of the teeter-totter—the side that makes the numbers higher and the side that makes the numbers lower—and the results will be the same. I don't have to predict future inflation. Whether price inflation is 2 percent or 12 percent over the next 30 years, my "bottom line" estimate of economic loss is not affected. This is true with a slight mathematical bias that causes a slight underestimate when inflation is removed from the estimate.

Fifth, Mr. Doe's earning power is projected through future years and economic loss is cumulated year by year so that a loss total can be seen for any assumed retirement age. Alternatively, earnings projections are lowered at each future age of Mr. Doe by the three probabilities that could cause Mr. Doe not to be earning wages week-by-week at any future age. He must be alive at any age to earn the wages I'm projecting. We know the probability of living for an average white male—his "L" probability—at each age from official government statistics. He must also be participating, that is, working or trying to find a job, to earn the income I'm projecting. Workers don't participate—the "P" probability—when they retire or stay home to raise children, for example. We also know these "P" probabilities from the U.S. government. Finally, Mr. Doe will only earn the income I'm projecting if he is, in fact, employed—the "E" statistic from the U.S. government. This joint probability LPE is used to lower the lost earning capacity estimates at each age—economists call it a work-life expectancy adjustment—and these reductions become very substantial as the retirement probabilities of Mr. Doe rise in his late 50's and his 60's.

Sixth, the loss estimates must be reduced one more time for the likely personal consumption of Mr. Doe had he lived. His wife and children would not have received that portion of Mr. Doe's earning capacity which he would have spent exclusively on himself—for his food, his clothes, his recreation. To arrive at what is lost, in net, to Mr. Doe's survivors, we must subtract from his earning capacity that portion of his earnings for Mr. Doe's exclusive consumption. The best study available says that this is 30 percent of Mr. Doe's earnings—and that was total family income because Mrs. Doe didn't work outside the home. You might say, "Well, 30 for Mr. Doe and 30 for Mrs. Doe is 60 percent—what about the other 40 percent?" The 40 percent is not deducted from earnings because it represents the items shared by Mr. and Mrs. Doe in common. In other words, they don't cut Mrs. Doe's mortgage payment because her husband is dead, nor the payment on the car they shared in common. So, my reduction in earnings to achieve the net economic loss for the jury is 30 percent of Mr. Doe's earnings for most years when the children have gone and slightly below 30 percent when the children are at home. Again, the best study, and the best available data, support percentage reductions of this nature.

Finally, Mr. Doe's family has lost the services he provided for the household, such as lawn work and home maintenance, which the family must replace, or do themselves, or do without. I took Mrs. Doe's best estimate of the average weekly hours that Jack Doe provided his family in terms of such services, and valued each hour of service only at the \$3.35 per hour federal minimum wage.

Those are my major facts and assumptions and, really, that is an overview of what I have considered in arriving at my conclusion.

PLAINTIFF'S ATTORNEY: Dr. Economist, based upon those facts and assumptions, what is your estimate of economic loss in this case? . . . and let's focus now on earnings and household services losses net of personal consumption. We will get to the loss of the pleasure of living in a minute.

ECONOMIST: My estimate of wage, fringe benefit, and household services losses, net of Mr. Doe's own consumption had he lived, is a present value of \$605,795. You can see this in the blow-up of the summary table to my report, which I have here in front of me. As we will see, this means that if a \$605,795 lump sum were received today, and invested at compounding interest, then all of the principal and all earned interest would be necessary to put Mr. Doe's family in the monetary situation that they would have been in had Jack Doe not been killed. They are restored exactly to the net purchasing power status which Mr. Doe would have provided for them, year by year by year. And at the end of the period in which Mr. Doe would have worked, nothing remains of the \$605,795 or its earned interest. It has all been used up in the process, and nothing is left over, or "extra."

PLAINTIFF'S ATTORNEY: Could you describe in more detail how you arrived at this conclusion?

ECONOMIST: Let me use the blow-up of my wage loss table to describe the calculation process in more detail (refer to Table 8 of Chapter 3). The wage loss base is exactly \$30,046, although the loss figure shown for 1989 is \$26,342, or the pro-rated wages lost in 1989 after Mr. Doe's February 14, 1989 date of death. The \$30,046 wage loss base comes from the 1977–1988 average of Mr. Doe's gross wage earnings each year divided by the hourly rate of pay in each year. Carpenters may not work during some periods of each year, because of weather, for example, but may work large amounts of overtime at one and-one-half the regular pay rate at other times. By looking at Mr. Doe's earning history and pay rates for the 1977–88 period, we can account for these irregular variations and know that, on average, he has been paid at a straight-time pay rate for 1,810 hours per year. We know that the union pay rate was \$16.60 per hour throughout 1989. The \$30,046 wage loss base is the 1,810 average hours paid based upon Mr. Doe's own earnings "track record" times this \$16.60 per hour paid to journeyman carpenters.

This \$30,046 full-year base then moves to \$30,434 (pointing to chart) in 1990 and on up through Mr. Doe's life expectancy. What should strike you is that these wage numbers are not moving up by very much year to year. The union pay rates were moving up by 7.40 percent each year, but these rates only move up by 1.29 percent each year. Remember that I said that inflation was removed from the analysis. How fast wages grow is the "Teeter" side of the Teeter-Totter effects on our \$30,046 wage loss. Wage rates grew by 7.40 percent for our historical period but price inflation was 6.11 percent of this total growth. In other words, wages had to grow by 6.11

percent over the 1970–88 period just to keep up with price inflation and keep the *purchasing power* of Mr. Doe's earnings just the same. I am removing these inflation effects and only increasing wages by the 1.29 percent annual growth rate in wages that remains from the 7.40 percent overall wage growth rate when inflation is removed. This 1.29 percent wage growth may be because Mr. Doe's productivity has increased year by year. Economists call this 1.29 percent growth "real" wage growth, and you may like to think of it as the track record of Mr. Doe's ability to increase the *purchasing power* of his earnings. It is this purchasing power which we are trying to restore from the invested \$605,795 lump sum, whatever is the rate of future price inflation. Obviously, the higher the real wage growth rate used—our 1.29 percent versus 2.29 percent versus 7.40 percent—the higher would be our lump sum loss amount. The Teeter side of the Teeter-Totter increases our loss amounts.

But our gross wages are multiplied by something called a Discount Factor to lower the numbers to the "Present Value" numbers seen here in our blown-up chart. This discounting to present value process is the Totter side of our Teeter-Totter, and it makes our lump sum estimate go down. Let me use Mr. Doe's age 50 year—2003—from the chart, when he is expected to earn \$35,953, to explain this thing called "discounting." Would we include \$35,953 in our \$605,795 loss total to cover the age 50 loss? No. If we did so, we would be providing too much money. Mr. Doe's survivors could take the \$35,953 today in 1989, invest it and earn compound interest, and have by Mr. Doe's age 50 year much more in principal and interest than he would have brought in. The process of discounting to present value is the exact reverse of the compounding interest process, if you put \$1,000 in a savings account and earned compound interest. This means that if a present value of \$23,353 (pointing) is added into our \$605,795 loss total to cover age 50 lost earnings, then by Mr. Doe's age 50, the year 2003, the survivors will have exactly the \$35,953 that Mr. Doe would have earned, using principal plus all earned interest. All of my estimates are in these lowered, present value dollars, so that we cover the exact amount of loss in each future year—not a penny more and not a penny less.

The key to the Totter side, and what determines these Discount Factors, is the interest rate that can be safely earned on a lump sum received today. This interest rate, on safe U.S. government securities, averaged 9.24 percent for the same 1977–1988 period that we used for projecting wage earnings. But remember that we are removing price inflation from the Teeter-Totter, and 6.11 percent of this 9.24 percent is price inflation. Lenders have to receive this much just to be paid back in dollars of the same purchasing power that were loaned out. We removed inflation from the Teeter side that makes the lump sum estimates larger—we increased wages by only 1.29 percent per year and not the 7.4 percent rate that includes inflation. Similarly, we now remove the same 6.11 percent inflation rate from the 9.24 percent average interest rate (called a discount rate) and discount to present value by what remains. What remains is a 3.13 percent discount rate for each year, which economists call a "real" discount rate.

You might look at it this way. Assume our Teeter-Totter was level and price inflation was a 10-pound weight sitting on both sides of our Teeter-Totter. The Teeter-Totter is still level if we remove that 10-pound weight from *both* sides of the Teeter-

Totter. We can remove inflation from the analysis and our “bottom” line is the same whatever future price inflation happens to be. There is a slight mathematical bias which results from removing inflation, but this bias results in a slight underestimate.

Let me show you what I have just said by referring to another enlarged chart (Chart 1). Chart 1 begins with a bar graph showing the rate of price inflation from 1952 through our last full year of 1988. Notice that the rate of price inflation is all over the place—very low, very high, up and down. This is why it’s nice if we don’t have to make earnings projections dependent upon the precise inflation rate in any future year.

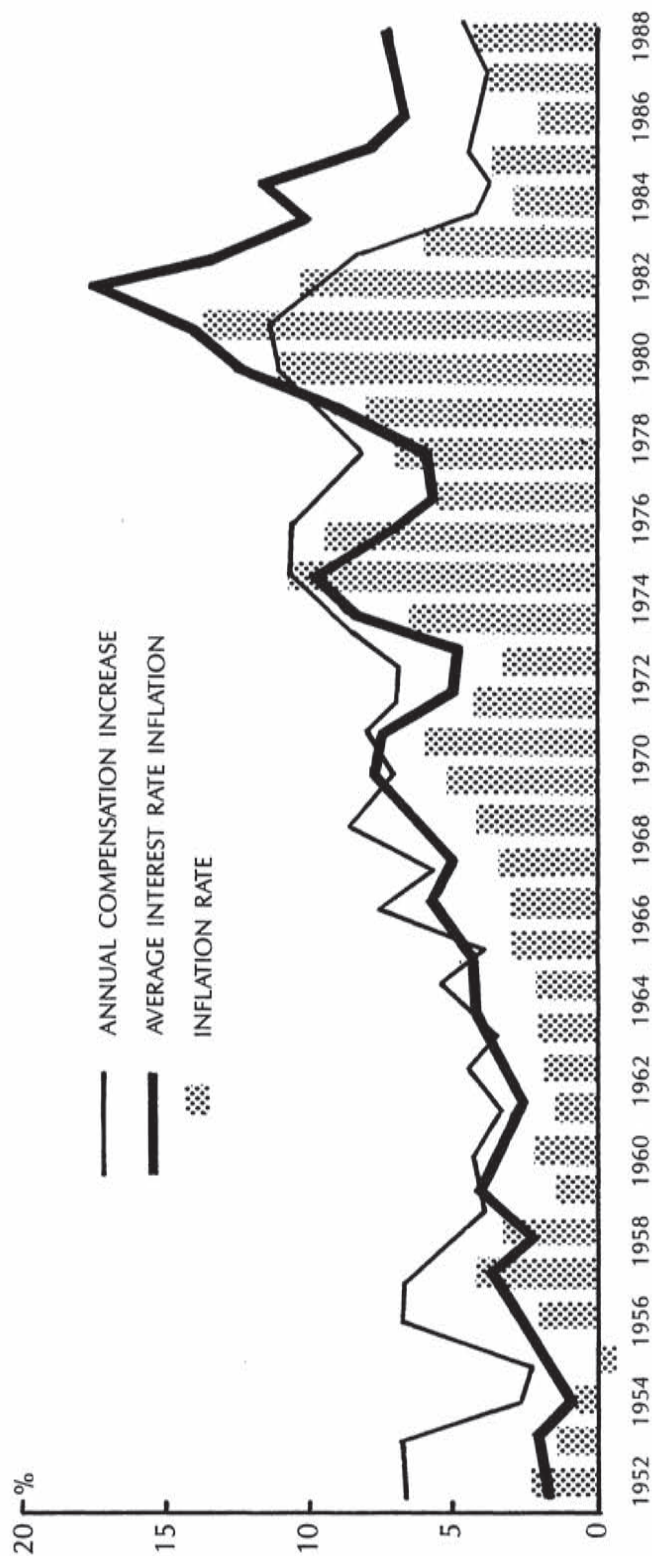
In the white line, we track the average rate of wage growth for U.S. workers—the Teeter side—for the same period. You can see that most of wage growth in any year is the inflation rate. When the inflation rate goes up, the average rate of wage increases goes up, and vice versa. Similarly, the black line tracks an average interest rate, or discount rate, for these same years. This is the Totter side. Again, the largest component of the discount rate is this same inflation rate. You’ll notice, and probably remember, how high interest and mortgage rates were in the late 1970s, when we had double-digit inflation. The point is that the Teeter side and the Totter side are very close together, and move together, whatever the rate of price inflation. This can be shown even more clearly in the next chart (not shown here) in which the inflation rate has been removed and we see real wage growth versus real discount rates. Thus, with the slight mathematical bias already mentioned, we can remove inflation from the analysis and not need to predict it at any future time—just so the basic Teeter-Totter relationship that we have seen in the past continues into the future.

Referring back to the “Present Value” column in our wage loss chart (Table 8 of Chapter 3), you will note that the present value figures fall every year as we go into the future. Why? Because we based this projection on the 1977–1988 wage history of Mr. Doe and average discount rates for the same period. Therefore, we are teetering up at a real wage growth rate of 1.29 percent per year but tottering downward by a real interest or discount rate of 3.13 percent. Since we are tottering downward more than we are teetering upward, the present value numbers should, in net, be moving downward. And you see here that this is exactly what happens.

But we are not finished yet. Another substantial reduction to the loss estimate must be made because of those LPE factors mentioned before, and we see this in the present value figures being multiplied by the “Work-Life Probability” column to achieve the expected values of loss. It is these lower expected values that are added up to our \$568,512 wage loss total at the bottom of the page. Let’s again use the sample year of Mr. Doe’s age 50. After we have Teetered and Tottered, we achieve a present value of loss of \$23,353. But our LPE, or Work-Life Probability, for an average white male at age 50, is .8418, or 84.18 percent. This means that there is an 84 percent probability that at his age 50, Mr. Doe would have been alive—the L is for life, trying to find a job or participating in the work force; and, in fact, employed and actually earning that present value of \$23,353 (pointing). By multiplying this \$23,353 by an 84 percent probability of LPE, we reduce the number by 16 percent to the expected value of \$19,659.

CHART 1

COMPARISON OF RATES OF PRICE INFLATION, COMPENSATION INCREASES,
AND INTEREST (DISCOUNT) RATES, 1952-1988



Source: For average compensation changes of U.S. workers, monthly issues of the U.S. Bureau of Labor Statistics, *Monthly Labor Review* (Washington, D.C.: U.S. Government Printing Office), Tables 42 and 44; for interest rates, *Economic Report of the President* (Washington, D.C.: U.S. Government Printing Office, January, 1989), Table B-71, p. 390; and for Consumer Price Index, monthly issues of the U.S. Bureau of Labor Statistics, *Monthly Labor Review* (Washington, D.C.: U.S. Government Printing Office), Tables 30 and 32.

We have adjusted for a range of events that would have prevented Mr. Doe from achieving his full earnings—the probability that he could have died, been sick for part of the year, been disabled by injury or illness, retired early, taken a year off working for whatever reason, or been unemployed for all or part of the year. All of these adjustments are calculated using U.S. government data. And look at how large these yearly reductions in the loss amount become as Mr. Doe would have become older (pointing). By age 60, the reduction is 33 percent, as many persons are starting to retire, for example. By age 66, the reduction is almost 90 percent and only \$2,000 is being added into the loss total.

A final comment on this loss table is that you would not assume a retirement age at 65, for example, and use the \$550,676 wage loss total from the Cumulative column. We are already lowering the estimates for retirement and all other probabilities at each age. To cut off the estimate at any age before the age 75 end of life expectancy would mean making the work-life reductions two times and “doubly” lowering the figures. As it is, this table ends at life expectancy and also makes “L” reductions, so we are making a double reduction in the “L” factor anyway.

Now, that was just the wage loss component of economic loss, which we teetered, tottered, and LPE’d. I have calculated lost employer contributions to Mr. Doe’s fringe benefits, based upon the requirements of the labor contract, and these total exactly 30 percent of the wage loss numbers for each future year that we have just discussed. These fringe benefit losses must also be teetered, tottered, and LPE’d with exactly the same adjustments as for wage losses.

Here, we are talking about legally-required employer contributions to fringe benefits, such as social security, workers’ compensation, and unemployment compensation, and specific contributions to the health and welfare fund and the pension fund. Remember that the LPE factors lower our earnings loss estimates in every year for such possibilities as sickness, disability, layoff, or early retirement. It then makes sense to add back in the fringe benefit value when and if a person does become sick or disabled, or is laid off, or retires.

We now must lower the wage and fringe benefit estimate by that portion of his earnings which Mr. Doe would have spent exclusively on himself and which the family would not have received even if Mr. Doe had lived. The best study available suggests a 30 percent reduction, which is consistent with Mr. Doe’s own spending records. The reduction is slightly less in the years before the two children reach a majority age and leave home, according to the same study. Remember that Mrs. Doe also spends 30 percent of income on herself but also continues spending the other 40 percent on “common” expenditures to keep a household going. They didn’t cut Mrs. Doe’s mortgage payment because Jack Doe died and isn’t living there.

Finally, we know from Mrs. Doe how many hours per week that Mr. Doe was providing in household services for the family—home maintenance and lawn and garden work were the major examples. This is only 10½ hours per week and usually varies over time depending upon the number of minor children at home. These lost hours are valued at the minimum value of the federal minimum wage. This \$3.35 per hour has not risen since 1981. So we are adding in a value less than \$2,000 in the first full year of loss 1990 (Chapter 5, Table 3) and, again, reducing all future losses in this category by discounting to present value. The work-life

expectancy, or LPE, reductions are not relevant for household services or losses.

That, Mr. Attorney, is how I arrived at my economic loss estimate in this case—\$605,795.

PLAINTIFF'S ATTORNEY: Dr. Economist, all of that sounds kind of complicated. Since you said the Teeter-Totter effects are close together over time, can't you just wash them out for simplicity? Can't you take Mr. Doe's \$29,000 loss level, net of personal consumption, in 1989, multiply it by the 30 remaining work years until Mr. Doe's retirement at age 65, and get an answer?

ECONOMIST: You could, but the loss in your simple example is \$29,000 times 30 years, or an \$870,000 loss compared to my loss estimate of \$605,795. Your technique has been called the "Total Offset" technique, or having the Teeter increases cancel out the Totter decreases, and such a technique may be allowed in some states. Remember, though, that we are tottering down more than teetering up, and this makes a significant difference over all of these years. Also, average retirement age has been less than 65 for many years. A U.S. government table would cut off earnings at an age closer to 60, but my LPE reductions are larger than even under this approach.

PLAINTIFF'S ATTORNEY: Now, Dr. Economist, before turning to one final area of damages, let me ask you about something I don't understand in regard to your \$605,795 loss estimate. Couldn't Mrs. Doe take a \$605,795 lump sum award received today and invest it at about 8 percent in a U.S. government note and receive \$48,464 in interest every year and still have the \$605,795 lump sum remaining at the end of the period we're talking about? And isn't the \$48,464 much greater than the \$29,000 net loss of earnings and services in 1990? How do you explain this?

ECONOMIST: The problem with what you've just said is that a misleading trick is being played in your example. You have put inflation in the Totter side of your example when I didn't put inflation in the Teeter side of my calculations. You talked about investing the \$605,795 lump sum at an 8 percent interest—or discount—rate, but most of this rate was inflation. The after-inflation discount rate which I used was 3.13 percent because I only increased wages by the after-inflation wage growth rate of 1.29 percent—not the 7.4 percent wage growth rate that actually occurred. Otherwise, the annual wage totals would be much higher in future years than in the calculation chart that I showed you before.

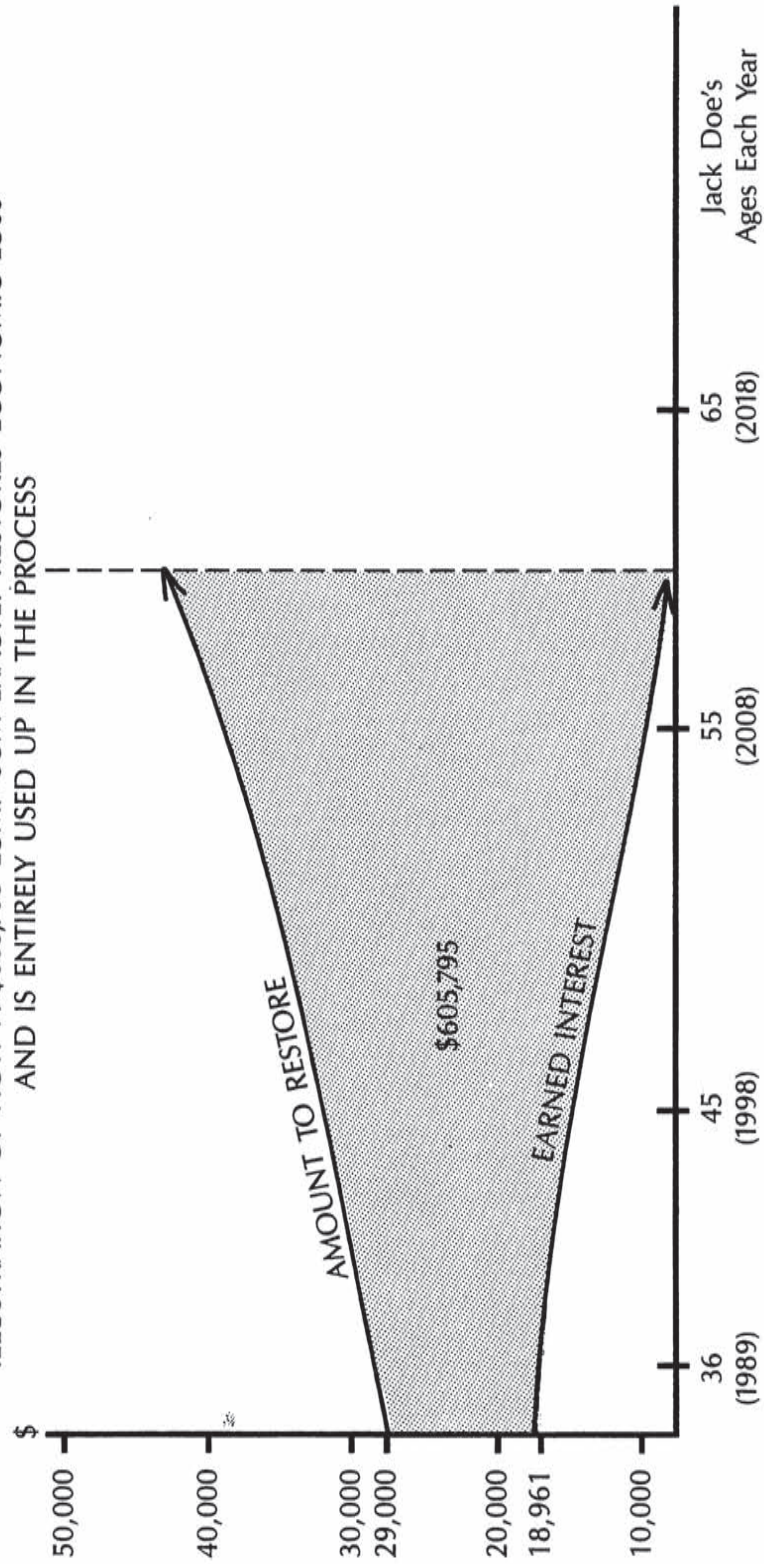
To fairly compare apples to apples in your example, the \$605,795 lump sum would be invested at the 3.13 percent real rate of interest and produce \$18,961 in annual interest earnings. This will only *help* to cover the economic losses in each future year.

In Chart 2, you see dollar values on the vertical axis of the graph, and Mr. Doe's relevant ages moving across to the right. In the first year of loss, approximately \$29,000 must be restored from the lump sum principal and earned interest, and this loss goes up by a "real" growth rate of over 1 percent per year (pointing). Only \$18,961 is earned in interest to cover the \$29,000 loss, so over \$10,000 must be removed from the principal lump sum even in the first year of loss. As we remove large chunks from the lump sum, it earns less annual interest, so the interest falls away rapidly.

I've shown work-life expectancy in this example by switching to an end of

CHART 2

ILLUSTRATION OF HOW A \$605,795 LUMP SUM EXACTLY RESTORES ECONOMIC LOSS
AND IS ENTIRELY USED UP IN THE PROCESS



Jack Doe's earning capacity around age 60, using an alternative U.S. work-life table. By the year in which Jack Doe would have reached age 60, \$605,795 would have been added to interest earnings to exactly restore economic losses in each year. In other words, the \$605,795 was needed to exactly restore the economic losses, along with the dwindling interest earnings, so that the \$605,795 received today was exhausted in the process. At the end of the relevant period, the lump sum has all been used up. Not a penny is left. The family will be in exactly the same shape at each point in time as if Mr. Doe had lived and continued to produce earnings and services.

PLAINTIFF'S ATTORNEY: Thank you, Professor Economist, . . . your witness.

CROSS-EXAMINATION—DECEASED JACK DOE

DEFENSE ATTORNEY: Professor, what do you charge for your report and for being here to testify?

ECONOMIST: \$1,200 for the written report and \$1,200 per day of testimony . . .

DEFENSE ATTORNEY: And how much of your income comes from your work with lawyers?

ECONOMIST: I make more than one-half of my income from these activities.

DEFENSE ATTORNEY: In fact, Mr. Economist, aren't you what they call a professional witness, whose livelihood depends upon jury awards in these types of cases?

ECONOMIST: First of all, I am not a professional witness. I am a professional economist who has specialized in the proper calculation of economic damages, and I am asked to be a witness because of this specialty. Secondly, I do charge a fee for my work, but my fee has never had anything to do with a particular award in any case—either whether or not an award was made or its amount. Third, I work as much on the defense side of these cases as on the plaintiff side, and I perform the analyses the same way regardless of which side employs me.

DEFENSE ATTORNEY: Did you, alone, determine the assumptions that you made in this case and, if not, do you agree with all of the assumptions?

ECONOMIST: I made the assumptions, and I agree with them. I think they are reasonable and appropriate for an accurate estimate of economic loss in this case.

DEFENSE ATTORNEY: But if any of your assumptions are wrong, your results are wrong, correct?

ECONOMIST: Changes in any of the assumptions could affect the "bottom line" loss estimate, either up or down . . . that is correct.

DEFENSE ATTORNEY: You spent a lot of time and several charts talking to the jury about why you remove inflation from your forecasts. Don't you remove inflation to fool the jury—so they won't understand how large you think Mr. Doe's wages would be at say, his age 65?

ECONOMIST: Absolutely not. I remove inflation to focus upon what damages calculations must really be all about. And that is providing a lump sum which will restore the purchasing power in each future year that Jack Doe would have provided to his family, had he lived. I'm trying to make the situation more clear.

DEFENSE ATTORNEY: But didn't you say, at least in your deposition, that Jack Doe was increasing his wage earnings by about 7½ percent per year and you took

inflation out to make it a real wage increase of a little over 1 percent?

ECONOMIST: Yes sir, for the reasons I've explained.

DEFENSE ATTORNEY: Well, Mr. Economist, if you had increased your \$30,046 wage base by 7½ percent per year, what annual wages would you project Mr. Doe making at his age 60?

ECONOMIST: I would have to do the calculation, but at a 7 percent compound growth rate for 30 years, wages would be over \$200,000 per year in future dollars. That's a mathematical operation that any juror can prove with a hand calculator. And that's why we restore purchasing power, whatever the rate of inflation happens to be. Think how much you pay for a candy bar today, or a movie ticket, or a car, or a house versus 30 years ago in 1959. My techniques are designed to make the survivors whole in what Mr. Doe's earnings would have bought them in any future year.

DEFENSE ATTORNEY: Professor Economist, how much could a lump sum amount be safely invested at today?

ECONOMIST: Around 8 percent, and I used a real interest rate of 3.13 percent to discount.

DEFENSE ATTORNEY: So anyone could get an 8 percent return and you only used 3 percent, which makes your loss estimate a lot higher doesn't it?

ECONOMIST: Absolutely not. I use the 3 percent with inflation removed only because I increased the earnings loss by a 1.29 percent annual growth rate with inflation also removed—not a 7½ percent wage growth rate based upon the specific wage history.

DEFENSE ATTORNEY: Professor, can the family or can they not earn an 8 percent return on your \$605,795 guesstimate and isn't that almost \$50,000 in interest earnings in the very first year—1990—when even you think the family would have lost, in net, less than \$30,000 in that same year? If you are \$20,000 wrong even in the very first year, why should this jury pay much attention to anything you say?

ECONOMIST: First, you used the term "guesstimate," not me. I think it is a sound and fair estimate of economic loss in this case. Second, the basic technique used by economists to convert a stream of future losses into a lump sum loss amount does cause the interest amount in the first year to be more than the first year loss. But this is a small concession to a basic technique that ensures that the lump sum and invested interest will exactly restore losses over the entire period of loss. And my removing inflation from the analysis does not cause this situation. If we kept inflation in *both* the Teeter and the Totter, increased wages at 74 percent and discounted at 8 percent, the interest earnings in the first year would still be above the first year loss.

DEFENSE ATTORNEY: Isn't it true that the lower the discount rate you use, the higher the loss estimate?

ECONOMIST: Yes sir.

DEFENSE ATTORNEY: Don't you use about the lowest interest rate possible to discount—the yield on very-short-term U.S. government bills? And doesn't that make your losses as high as possible?

ECONOMIST: No sir, that 8 percent—or 3 percent real rate—which we have been talking about is more than most of us earn on standard savings accounts.

But if we were willing to run risk on the \$605,795 being available to restore losses in the future, we could invest in riskier things than U.S. government securities or lock our money away for long periods at fixed returns as inflation eats away the purchasing power of these returns.

DEFENSE ATTORNEY: Professor, just please answer my questions. Haven't other economists advocated different kinds of relatively safe investments with returns higher than 8 percent—and wouldn't those higher discount rates result in much lower loss totals?

ECONOMIST: I use discount rates on short-term U.S. government securities because it is the safest investment we can make. If other investments bring returns beyond the 8 percent in your example, it is because they must pay more than 8 percent to get investors to place their money there and run various risks. But it is not my role here to assume that the Doe family will run risks for returns greater than 8 percent. I don't have them investing at risky returns for greater-than-normal interest earnings because I also don't want any chance that they will lose the lump sum principal or its purchasing power.

DEFENSE ATTORNEY: You didn't answer the question, again. If we polled all of the members of this national group of so-called forensic economists, wouldn't many advocate a higher discount rate than you used. In fact, wouldn't they disagree with many of your techniques and conclusions?

ECONOMIST: On discount rates and on other major issues, I am very much in the mainstream of what the group of other experts like me do around this country. I doubt if many other people in this country have spent more time over the years researching and writing about these techniques and issues. But you are correct that you could find economists who would quibble about any specific technique of another economist.

DEFENSE ATTORNEY: Would other economists in your national group come to conclusions significantly lower than your own?

ECONOMIST: I don't believe any other credible economist, who has specialized in damage calculations, could come in here with a significantly lower estimate and make the Doe family whole. If someone would try, I'm sure that you'd have them here and I would be very pleased to listen to, and comment on, anything they might say.

DEFENSE ATTORNEY: Dr. Economist, if liability isn't proven in this case, what you or any other economist says about damages doesn't matter, anyway, does it?

ECONOMIST: Well, I'm not a lawyer, but . . .

DEFENSE ATTORNEY: Under your understanding of the law, if liability is not proven in a case like this, there are no damages. Damages are zero. Right?

ECONOMIST: My understanding, yes sir, is that the amount of damages I calculate is irrelevant if there is no liability in a case.

DEFENSE ATTORNEY: Haven't you said that there are reasons to believe that fringe benefits as a percentage of wage earnings will decline in future years?

ECONOMIST: Yes, but that was in the context of also writing about the fact that fringes as a percent of wages have rapidly and steadily moved up over the last several decades. The best assumption is that the fringes-to-wages relationship established by contract and by law for Mr. Doe when he died would have remained

the same in the future. Some economists have projected a continuing increase in fringes to wage earnings.

DEFENSE ATTORNEY: Professor, haven't many economists criticized your LPE technique? Don't most economists use U.S. government work-life tables?

ECONOMIST: I haven't seen any criticism of the LPE technique in terms of it being inferior to any alternative method of considering work-life expectancy, especially U.S. work-life tables. Remember the LPE data are also official U.S. government data. But U.S. government work-life tables only adjust for the L and the P—in effect they assume no chance of future layoff or unemployment. My LPE factors do adjust for the chance of unemployment and result in lower loss estimates. Since you brought it up, I can tell you what the loss would be if we had used a U.S. government . . .

DEFENSE ATTORNEY: Let's talk about what you didn't include in your LPE adjustments. You may have adjusted for employment probabilities, but haven't you assumed full-time work when people in their 50's and 60's, especially, often work part-time when they work at all.

ECONOMIST: To my knowledge, no work-life tables in use have focused upon chances of part-time work, perhaps because we've been estimating earning capacity. In this case, however, my loss estimates are fundamentally based upon Mr. Doe's history of work hours. Remember, the earnings base was a 12-year average of his hours paid each year. Also, when part-time work, when working, becomes more common for men in their age 60's, the LPE factors are already producing very large reductions in earning capacity estimates. Relatively little is being added into the loss total for years of advanced age, anyway.

DEFENSE ATTORNEY: Dr. Economist, you added in your measurement of loss of household services of over \$70,000, right? And isn't it true than even the U.S. government, with everything else it tries to measure, does not measure the value of household services in the value of Gross National Product or of the product produced by any person?

ECONOMIST: You are correct that the U.S. government has not yet chosen to include the value of household services in GNP, but . . .

DEFENSE ATTORNEY: Just answer the question, thank you, Professor. Just another question or two, Professor. Do you consistently apply the same techniques whether you are on the plaintiff or the defense side of a case?

ECONOMIST: Absolutely, sir. Yes, that is correct.

DEFENSE ATTORNEY: Okay. Now, as I understand it, you reduced your earning capacity estimate by 30 percent in this case for the personal consumption of Mr. Doe. What is the highest consumption deduction that you have made in a wrongful death case—even in this state during the last 12 months?

ECONOMIST: Probably around 83 percent in the case of . . .

DEFENSE ATTORNEY: Thank you. That is all, your honor.

REDIRECT EXAMINATION—DECEASED JACK DOE

PLAINTIFF'S ATTORNEY: Dr. Economist, let me allow you to answer some of the questions which Mr. Defense Attorney didn't seem to want you to answer. Why would you use an 83 percent reduction in that other case in this state instead of the 30 percent reduction used in this case?

ECONOMIST: Because the deceased person in the other case was a single person. Had Mr. Doe been single, I would have deducted 83 percent of earning capacity in this case. Remember, when one of the married partners is killed, the surviving wife in this case spends her 30 percent of income for her exclusive items and the 40 percent that must still be spent on items formerly shared with her husband—such as mortgage and other payments. The logic is completely different in the case of a minor child or other single person. And the deduction is much higher.

PLAINTIFF'S ATTORNEY: Now, what were you going to say about household services and Gross National Product? Does the fact that the government doesn't measure it affect its status as an economic loss, in your opinion?

ECONOMIST: In my opinion, household services losses are every bit as real as wage losses. They may be measured less directly but they can be measured accurately and have been measured for many years. The U.S. government has been studying the measurement of household services for some time. Given budgetary constraints, they may not have chosen to undertake a new nationwide measurement, but I don't see that this undermines this element of economic loss in any way.

PLAINTIFF'S ATTORNEY: Dr. Economist, you valued those lost hours of household services at the \$3.35 per hour minimum wage. What is the chance that the Doe family or any of us could hire someone to do the quantity and quality of services provided by Mr. Doe in this town, today, at \$3.35 an hour?

ECONOMIST: There is almost no chance at all. It costs about double that amount to hire those types of replacement services in this market today.

PLAINTIFF'S ATTORNEY: Thank you, Professor Economist.

DIRECT EXAMINATION—JACK DOE (HEDONIC)

PLAINTIFF'S ATTORNEY: Do the losses that you have estimated thus far, wages, fringe benefits, and household services, all net of personal consumption, account for all the losses sustained by the decedent?

ECONOMIST: No they do not.

PLAINTIFF'S ATTORNEY: What additional losses are there?

ECONOMIST: Mr. Doe also suffered the loss of the pleasure of life, itself: the value that he would have expected to obtain from living beyond the value he may have attached to his net financial loss. This is a value which is recoverable in this jurisdiction according to my understanding.

PLAINTIFF'S ATTORNEY: Is there a name that economists sometimes use to refer to this value?

ECONOMIST: Sometimes this loss is referred to as a loss of hedonic value.

PLAINTIFF'S ATTORNEY: What does the word hedonic mean?

ECONOMIST: It comes from a Greek root word meaning value or satisfaction or pleasure. Economists use the word to refer to the non-earnings-based value of life, the value we get from living as opposed to working. People get value or satisfaction or pleasure from living, even though not all moments are pleasurable. But by and large, unless we are suicidal, we regard life as satisfying.

PLAINTIFF'S ATTORNEY: Is this non-earnings-based value, or hedonic value, a significant figure?

ECONOMIST: Yes it is. In this instance it is \$1,709,842 when applied to Mr. Doe. Studies have shown that where estimates of lost earnings are available as well

as estimates for the non-earnings value of life, the hedonic value ranges up to several times earnings.

PLAINTIFF'S ATTORNEY: Are you saying that economists have made measurements of the value of life beyond lost earning capacity?

ECONOMIST: Yes they have. There is an extensive body of literature published in scholarly journals estimating this value in several different ways.

PLAINTIFF'S ATTORNEY: What are those ways?

ECONOMIST: First, economists have examined the value of life expressed by consumers in their expenditures on safety. If you buy an air bag for your car, you are spending money to reduce the probability of injury and death. You are placing an implicit value on your life in so doing. Secondly, economists have studied what certain risky occupations receive as extra compensation for the risk they present. When someone receives an extra \$1.00 an hour as a security guard in a high-risk neighborhood, this represents a premium for the extra hazard to life. Finally, government agencies analyze the impact of lifesaving regulations and the costs associated with such regulations. All in all, there are dozens of estimates in the literature regarding the value of life published over the last several decades.

PLAINTIFF'S ATTORNEY: What do those estimates show?

ECONOMIST: The estimates show, typically, that we value life in the several million dollar range.

PLAINTIFF'S ATTORNEY: Can you describe to us an example of how these studies are conducted?

ECONOMIST: Yes. Assume that a person purchases a safety device for \$700 and that device reduces the probability of his death from 7 in 10,000 to 5 in 10,000. By reducing his chance of dying by 2/10,000ths, or one chance in 5000 at a cost of \$700, economists would say that he valued his life at \$3,500,000. In effect, if 5000 people spent \$700 each on airbags, one life would be saved at a total cost of \$3,500,000. These figures are not the actual figures from air bag studies, but just sample figures to show how the analysis is done, in simple terms.

PLAINTIFF'S ATTORNEY: Is this estimate for the total value of life?

ECONOMIST: Yes, these estimates include several components of value that must be subtracted out in order to arrive at the net satisfaction value. Specifically, we must subtract the net lost earnings value, the loss of household services, and the value of financial security for the statistically unknown, or anonymous, person being considered in these economic studies of the overall value of a human life.

PLAINTIFF'S ATTORNEY: Could you explain this in more detail?

ECONOMIST: Yes. The value of life estimates are, in many instances, for the lives of anonymous persons. From that total value, we must account for what the unknown, statistically average person earns, contributes in household services, and attributes as a value of financial security. These figures add up to an estimated \$800,000. Netting this amount from a reasonably conservative estimate of the value of life leaves approximately \$2,700,000 which I treat as an undiscounted value for the anonymous, statistically average person.

PLAINTIFF'S ATTORNEY: What adjustments do you then make to the undiscounted \$2,700,000 figure?

ECONOMIST: I estimate the value of life per year of life expectancy by dividing

by the remaining life expectancy of an average person, which is approximately 45 years according to the life tables. This leaves a \$60,000 per-year value in 1989 dollars. Although most economists estimate that the remaining life expectancy of the lives of the people covered in the studies ranges from about 35 to 40 years, I used a more conservative figure of 45 years, which lowers the per-year estimate, because it is the value for an average person in the U.S. census.

PLAINTIFF'S ATTORNEY: What other adjustments do you make?

ECONOMIST: I then take into account the age, race, and sex of the decedent by calculating the losses through the life expectancy of Mr. Doe, using the same growth and discount factors we discussed earlier.

PLAINTIFF'S ATTORNEY: So you figured out the hedonic value of life based on the value that is attributed to statistically average people and then adjusted it to the specific characteristics of the decedent, namely, age, race and sex?

ECONOMIST: Yes sir.

PLAINTIFF'S ATTORNEY: What further adjustments did you make?

ECONOMIST: Economists do not know as yet how to adjust further, to take into account that the decedent was married, for example, or that he had two children. These factors and all the other factors regarding the quality of life of the decedent can only be taken into account by the jury, in my opinion.

PLAINTIFF'S ATTORNEY: So your figures can be adjusted upward or downward depending on other factors that a trier of fact may wish to take into account?

ECONOMIST: Yes sir.

PLAINTIFF'S ATTORNEY: No further questions, your honor.

CROSS-EXAMINATION—JACK DOE (HEDONIC)

DEFENSE ATTORNEY: Turning now to the intangible losses that you tried to estimate, what is the word you used for them?

ECONOMIST: I called it a hedonic loss, the loss of the satisfaction of living.

DEFENSE ATTORNEY: Are you saying that because Jack Doe lost out on the hedonistic opportunities he had, he should also be compensated, without taking into account any of the misfortunes he might have sustained in his life such as sickness of a loved one?

ECONOMIST: The term is hedonic, not hedonistic. The two are different. I have estimated the value that he placed on the satisfaction of living, which includes his fair share of life's misfortunes.

DEFENSE ATTORNEY: What is the purpose of the studies that economists have made that you refer to? Were they done to value life in court?

ECONOMIST: No, not particularly, but they can be used to do so. Government studies regarding average wages in various professions are not done to value lost earnings in court, but they are routinely used to do so.

DEFENSE ATTORNEY: Are you saying that because I will pay \$700 for an air bag to reduce the probability of dying by 1 chance in 5000 that I will sell my life for \$3,500,000?

ECONOMIST: No, if I asked you how much you valued your life, the answer would probably be an infinite amount. But by looking at the fact that if 5 million people were to buy air bags, they would be spending \$3,500,000,000 and in that

group, approximately 1000 lives would be saved. Whose life is not known with any certainty at all, but collectively as a group, 5 lives were saved at a cost of \$3,500,000 each. This is the basis on which economists say that members of the group place a \$3,500,000 value on life.

DEFENSE ATTORNEY: Don't you save more than a life when you buy an air bag? Don't you prevent injury, and don't you perhaps save property also in many of these devices such as smoke detectors?

ECONOMIST: Yes sir, that is true, and to the best of the ability of the analysts, the value of injury and property saving is taken into account.

DEFENSE ATTORNEY: Do you expect us to believe that the average person, in buying safety devices, knows the risks that he is averting?

ECONOMIST: Studies have shown that for common risks, average individual perceptions are quite realistic; for uncommon risks, however, such as for nuclear plant accidents, risks are misperceived.

DEFENSE ATTORNEY: Is your benchmark figure the result of averaging?

ECONOMIST: No, it is not a formal weighted average of the results. But I believe it is a reasonable estimate of the value that we may, on average, place on life.

DEFENSE ATTORNEY: So it is speculative whether Mr. Doe valued his life at this figure, isn't it?

ECONOMIST: No, it is not speculative. Speculative damages usually refers to the cause of the damages. Here we know that there was a loss from the death, we are not speculating. And in estimating the loss, we are not speculating any more than if we were estimating the earnings losses of a deceased 18 year old, who had just graduated from high school with no earnings history. In that instance as in this, we would be going to tables that show average earnings for males of certain ages.

DEFENSE ATTORNEY: Dr. Economist, do you know whether Jack Doe enjoyed life as much as an average person does?

ECONOMIST: I don't know whether he did or not. I have estimated the value that I believe he placed on his life based on the information that I can take into account. I can't help the jury to determine whether, due to other factors, Mr. Doe valued his life less or more than my estimate.

DEFENSE ATTORNEY: What if I told you Mr. Doe never bought an air bag?

ECONOMIST: That doesn't necessarily mean that he had a casual disregard for the value of life; he may have been very careful crossing the street and shown in other ways how he valued his life. Not all of his behavior must be consistent; I would agree though, that if he frequently took risks for no particular reason, that might be relevant.

DEFENSE ATTORNEY: Why isn't the hedonic value of life in the government accounting system like wages are?

ECONOMIST: The government does not account for household services in Gross National Product, either, as we discussed before. That exclusion does not mean that the value of such services, or that the value of living, is zero.

DEFENSE ATTORNEY: What is the multiple between the lowest and the highest figure in the studies you examined?

ECONOMIST: The multiple is something like 5 for the more accepted studies.

DEFENSE ATTORNEY: Five times from low to high! I find that a rather broad range, Professor Economist. No further questions, your honor.

REDIRECT EXAMINATION—JACK DOE (HEDONIC)

PLAINTIFF'S ATTORNEY: Is it speculative to state that we place a value on our lives?

ECONOMIST: No. We, governments, industry, and individuals are constantly in the process of weighing risks and expenditures, implicitly valuing life in the process.

PLAINTIFF'S ATTORNEY: When a policeman negotiates for extra pay due to the extra risk of death on his job, does he ask for, on average, as much as you or I?

ECONOMIST: No, studies of risk premiums paid to certain occupations probably underestimate the value of life, since those jobs attract people who show more than average willingness to place their lives at risk. This concept was first put forth by Adam Smith, who was perhaps the first economist, in the late 1700s.

PLAINTIFF'S ATTORNEY: How do you explain the broad range of results?

ECONOMIST: Well, if you do studies of how much money high school graduates earn, you will find that some of them wind up barely making a living, and some of them, as entrepreneurs, wind up making millions of dollars. I don't find it unusual that in the studies of how various groups value life there is a significant variation. We don't all value life the same, I expect.

PLAINTIFF'S ATTORNEY: Are you saying that the hedonic value of Mr. Doe was \$1,709,842?

ECONOMIST: No. Only God knows the true value of Mr. Doe. I have made an estimate based on what economists can take into account. The trier of fact can adjust my estimate based on additional factors.

PLAINTIFF'S ATTORNEY: So the fact that Mr. Doe enjoyed a caring wife and two lovely children is not specifically taken into account in your analysis, is it?

ECONOMIST: No, it is not.

PLAINTIFF'S ATTORNEY: No further questions. Thank you for your testimony.

