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Estimating the Loss of Social Security Retirement Benefits

by

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I. Introduction

One of the legally-mandated fringe benefits provided to virtually all U.S. workers is coverage under the Old Age, Survivors, Disability and Health Insurance (OASDHI) system, commonly known as "Social Security." When a worker is injured or killed, forensic economic experts often value the loss of these benefits using the employer's share of the FICA tax (currently 7.65%) levied on estimated lost earnings, or, excluding the 1.45% Medicare portion of this tax, at 6.2% of estimated lost earnings. Because the Social Security system is so complex, the simplicity of this method of valuing lost Social Security benefits, herein dubbed the "FICA tax method," is very appealing. Unfortunately, this valuation method is unlikely to measure correctly the losses of injured workers or their survivors vis-à-vis the Social Security system. The purpose of this paper is to describe the size of the measurement error arising from using the FICA tax method. The magnitude of the error is exposed by describing how the true losses of Social Security benefits resulting from a loss of earnings can be estimated, and then showing that the FICA tax method gives an accurate estimate of these true losses in only a minuscule portion of the situations in which forensic economists are called upon to supply damage appraisals. Examples illustrating the quantitative size of the errors that result from using the FICA tax method are shown.

The plan of this paper is as follows. Section II provides a review of the relevant literature, focusing on what this literature has to say about a) the inclusion of lost Social Security benefits as an element of damages, b) the way the size of that loss should be estimated, and c) the accuracy of the FICA tax method for computing that loss. Because personal injury and wrongful termination

cases have been more extensively covered in previous work, the bulk of the new work in this paper deals with death cases, the loss of Social Security benefits in wrongful death cases being the subject of Section III. Section IV offers some concluding remarks.

II. Literature Review

Prevailing Practice. Several respected books dealing with damage appraisal in the contexts of personal injury and wrongful death advocate estimating the loss of Social Security benefits due to a reduction in or total loss of earnings by multiplying the employer's share of the OASDHI tax of 7.65% or the employer's OASDI contribution of 6.2% of money earnings, by the estimated earnings loss:

1. Brookshire and Smith (1990, pp. 77-8): "Employer Social Security contributions are by far the largest element of legally-required payments. The Social Security system is formally known as the Old Age, Survivors, Disability and Health Insurance (OASDHI) system....By 1989, the employer tax had risen to 7.51 percent of annual wages of \$48,000. Thus, a conservative approach to this element of fringe benefit loss would be to project 7.51 percent of wages into the future....another adjustment must be made if the projected annual wage earnings of the plaintiff are greater than the current or projected maximum earnings for required employer contributions. The maximum dollar contribution for an employer, which was 7.51 percent of \$48,000 or \$3,605 in 1989, would be the numerator of a fraction and the anticipated wage earnings would be the denominator. It is possible to project the Old Age Insurance portion of the lost OASDHI benefits as the present value of the likely stream of benefits upon retirement, rather than as a percentage contribution into the OASDHI trust funds. Such a technique is complicated and rarely used. Certainly, fringe benefit losses cannot be projected as both percentage contributions into a plan during working life and also as a stream of benefits upon retirement. This would clearly double-count the particular category of fringe benefits loss."
2. King and Smith (1988, p. 22, fn. 7): "Fringe benefits include the following components: employer's shares of payments for the individual's disability, dental, and health insurance, life insurance and pension plan premiums, profit-sharing payments, **employer contribution to Social Security**, and employee education expenditures; they do not include paid rest periods, paid vacations and paid sick leaves." (emphasis added)
3. Martin (1996, p. 4-8): "'Legally Required' benefits are paid on behalf of most workers, but give careful consideration to just how much of these benefits to include as a loss....The only amount that normally need be included in this category is the 6.2% allocated for Social Security. The total Social Security contribution by the employer is 7.65%, but of this, 1.45% is for MediCare. If the plaintiff has already met the requirement for being fully insured, then no additional amount will increase his MediCare benefits as they are already at the maximum. The 6.2% for Social Security, however, should be added as final retirement pay is based on total lifetime earnings and the level of those earnings. Being

fully insured only ensures *some* retirement payment will be made, not the amount.” (Italics in the original)

4. Speiser and Maher (1995, pp. 6-11 & 6-12): “A common problem encountered in appraising fringe benefits is the choice of valuing a benefit at cost to employer or at value to recipient. If there were no discount rate and no interest rate earned on funds set aside to pay benefits and if every employee received what the employer contributed, the matter would be very simple: an employer who set aside 6% of payrolls for a deferred benefit would create a 6% entitlement for each employee. But things are not so simple. Take the employer’s Social Security contribution which is 6.2% of earnings to a maximum of \$60,600 in 1994. Is it accurate to value the employer’s contribution at cost, namely 6.2% of earnings to assess the value of the benefit to be received upon retirement or to estimate what Congress may legislate the benefit to be after retirement? A reasonable and conservative approach is to use the percentages of employer contribution whenever possible, thereby avoiding prognostications on the whims of Congress and, as well, avoiding the necessary deduction of the share of future benefit attributable to the employee’s contribution. The deduction will be necessary if the evaluation of lost earnings has included the employee’s contribution which, under Social Security, is part of his reported earnings. But this approach is manifestly unfair to the employee if he was only a few years from retirement, so that the employer’s contribution is but a tiny fraction of the value of the benefit he would become entitled to. Even for the worker further from retirement there is the likelihood of understating the loss because the size of the benefit is geared to the average level of covered earnings; with rising levels of earnings, past contributions may understate the future lost values. As good a rule of thumb as can be put forward for the Social Security benefit is to value retirement pension at cost to the employer for younger workers, and at the discounted value of the expected pension for older workers. For older workers, their own contribution to their retirement should then be excluded in the appraisal of their basic earnings loss.”

Criticisms of the FICA Tax Method. The FICA tax method has been criticized in articles appearing in the *Journal of Forensic Economics*, the *Litigation Economics Digest* and in papers given at forensic sessions at professional meetings. It has also been rejected in some court decisions. I discuss this literature chronologically.

Rosenman and Fort (1992, hereafter “RF”) argue that the FICA tax method (referred to by them as the “employer cost method”) is invalid for defined benefit retirement plans, such as the one provided by Social Security, because in such plans there need not be a necessary relationship between benefit payout and the level of contributions. They note that “For defined benefit plans, the sum of contributions determines the fully-vested retirement account. For defined benefit plans, this simply need not be true and the correct marginal value of contributions must be determined by actually calculating the incremental impact on final retirement income of a change in contributions.

Thus, Social Security benefits are not amenable to employer cost techniques.” (p. 152) RF offer examples in which a worker is forced by an injury to leave the labor force at, respectively, ages 60 and 30. In addition, the worker is assumed to earn either the minimum wage or the maximum level of earnings subject to OASDI taxes. For the 60-year-old, RF find that the present value of the loss of Social Security retirement benefits is much smaller (4% in the minimum wage case and 21% in the maximum earnings case) than the present value of employer contributions. For the 30-year-old worker, the present value of lost retirement benefits is also smaller than employer contributions, but not nearly as much in percentage terms, being about 82% in the minimum wage case and about 70% in the maximum earnings case. Because the present value of the employer contribution on lost wages is matched by the employee’s contribution, the additional conclusion is reached that the worker each of the scenarios actually experiences a net financial gain vis-à-vis the Social Security system in that the present value of retirement benefits lost is exceeded by the present value of the employee taxes saved. RF go on to argue that since some of the funding for Social Security goes to pay for disability insurance and survivors benefits, it is inevitable that the present value of lost retirement benefits will be smaller than employer contributions, meaning that the net loss to the injured worker is frequently negative.¹ If one further takes into account disability benefits the worker may receive because of the injury—assuming this is not impermissible under collateral source rules and assuming that such benefits have not been deducted from estimated lost wages—the injured worker is even more of a financial gainer vis-à-vis the Social Security system due to the injury.

¹In 1997, Social Security paid cash benefits, excluding Medicare, of about \$362.0 billion, of which about \$223.6 billion, or 61.7%, were in the form of worker retirement benefits. About \$20.0 billion (5.5%) went to spouses and children, about \$72.5 billion (20.0%) went to survivors (mostly widows and widowers), and \$45.7 billion (12.6%) was paid as disability benefits. See *Annual Statistical Supplement to the Social Security Bulletin, 1998*, Tables 4.A5 and 4.A6.

A comment on the RF paper by Stephen E. Durham (1993) points out that RF ignore (a) spouse and dependant benefits and (b) disability benefits. The effect of ignoring spouse and dependant benefits depends of the specifics of the situation. Durham focuses on the spouse benefit and ignores other dependants.² If the injured worker's spouse was never employed outside the home, the spouse will be entitled, at full retirement age, to a spouse benefit equal to 50% of the insured worker's benefit, and the present values calculated by RF are understated by 50%. In this scenario, the loss for the 30-year-old plaintiff is converted from a negative \$24,917 (with maximum earnings) and a negative \$2,591 (with earnings equal to the minimum wage) to positive net losses of \$3,921 and \$3,691, respectively. The FICA tax method still overstates the true loss, but the size of the error is smaller. On the other hand, if the injured worker's spouse had earnings substantially higher than those of the injured worker would have had in the absence of the injury, the retirement benefit of the injured worker would have been based on the earnings record of the spouse rather than on the injured worker's own earnings record. In this scenario, the employer and employee FICA taxes are a pure loss in that they would not have had any effect on the injured worker's retirement benefit.³

Durham next discusses disability payments. The size of disability payments, which are renamed "retirement benefits" when the injured person reaches normal retirement age, depend on the injured worker's pre-accident earnings history. For illustrative purposes, Durham makes the

²To understand the thrust of Durham's comment about spouse benefits, it is essential to recognize that the spouse benefit is based on the earnings of the insured worker, or the earnings record of the spouse, whichever yields the higher benefit for the spouse. For example, if at normal retirement age, the spouse is entitled to a benefit based on the spouse's own work record of \$400 per month and the husband is eligible at normal retirement age for a benefit based on the husband's own work record of \$1,000 per month, the spouse will receive a spouse benefit of \$500, since $50\% \times \$1,000 = \500 is greater than \$400.

³The injury itself may of course alter the worker's own earnings record in such a way as to cause the benefit to which the worker is entitled based on the worker's own work record to be smaller than the spouse benefit the worker can receive based on the spouse's work record. In such an instance, the benefit based on the spouse's work record puts a floor on the worker's loss.

assumption that the injured worker has always made \$x per month in real terms and would have continued to do so in the future, but for the accident. In that event, the worker's disability payment would be based on "average indexed monthly earnings" (AIME) of \$x. Retirement benefits but for the injury would have also been the same as disability benefits, meaning the loss retirement benefits would be zero. Employer and employee contributions would not therefore have any effect on the worker's retirement benefit and would instead be pure losses. If disability benefits received during what would have been the remainder of working life are offset against wages (which would require relaxing collateral source rules), then earning capacity is substantially reduced. If additional dependants' payments are also paid during what would have been the working years, and if, in addition, employee FICA taxes are deducted, the earning capacity loss may be entirely offset.

Taylor and Ireland (1996, hereafter "TI") describe decisions in Federal maritime cases in which the courts have ruled that payroll taxes are to be treated like other income taxes when making deductions from gross earnings to arrive at after-tax earnings as a measure of wage losses sustained by plaintiffs in such Federal personal injury cases.⁴ Another group of cases, including three by the U.S. Supreme Court, have held that Social Security benefits are noncontractual and should not be included as a loss element.⁵ Finally, the TI paper describes a FELA case in which the court ruled that a loss of Railroad Retirement benefits could be included as one of the elements of economic loss, but rejected the measurement of this loss by employer payroll taxes in favor of a

⁴The Federal case clarifying that income taxes must be deducted from gross earnings in Federal personal injury cases is *Norfolk and Western Railway Company v. Liepelt*, 444 US 490, 62 L 2d Ed 689, 100 S. Ct. 755 (1980). This need to deduct income taxes was affirmed in *Jones & Laughlin Steel Corp. v. Pfeifer*, 462 US 523, 76 L Ed 2d 768, 103 S.Ct. 2541 (1983). The three cases in which it was held that payroll taxes should be deducted from earnings are *Madore v. Ingram Tank Ships, Inc.*, 732 F. 2d 475 (1984); *Pickle v. International Oilfield Divers, Inc.*, 791 F. 2d 1237 (1986); and *Purdy v. Belcher Refining Company*, 781 F. Supp. 1559 (S.D.Ala. 1992).

⁵The three Supreme Court cases are: *Fleming v. Nestor*, 363 US 603, 4 L Ed 2d 1435, 80 S.Ct. 1367 (1960); *Richardson v. Belcher*, 404 US 78, 30 L Ed 2d 231, 92 S.Ct. 254 (1971); and *Weinberger v. Wiesenfeld* 420 US 636, 43 L Ed 2d 514, 95 S.Ct. 1225 (1975).

computation of the size of the loss based on the benefit formula for computing retirement benefits. The court in this case held that “Any link between the taxes paid and the benefits is too tenuous to provide a true measure of the plaintiff’s loss.”⁶ The court in *Adams* also held that invalid evidence was introduced “...by claiming the loss of employer paid Tier I and Tier II taxes in the employee’s name as lost income. This meant that the defendant may have been able to introduce evidence of the employee’s disability payments for the sole purpose of showing that the employee had not suffered the loss in the amount claimed by the plaintiff.” (p. 86) This possible exception to the collateral source rule is known as the “doctrine of curative admissibility.” Taken as a group, the rulings described in the TI paper represent a rejection of the FICA tax method and raise questions about whether used of the method is even permissible in Federal personal injury cases.

The reasoning in *Adams* was quoted in *Rachel v. Consolidated Rail Corporation*,⁷ in which the court held that lost Railroad Retirement benefits could not be valued as the present value of the employer and employee contributions made to fund benefits. As in *Adams*, the *Rachel* court held that the loss of pension benefits must be computed as the difference between the present value of benefits but for and given the injury. In light of this requirement, Ciecka and Donley (1997, hereafter CD) provided a paper that describes how these calculations can be made. This work is relevant to the valuation of lost Social Security benefits because of the very close similarity between Tier I Railroad Retirement benefits and Social Security retirement benefits. The CD paper was commented upon by Fry and Hatcher (1998, hereafter FH), with a reply by Ciecka and Donley (1998, hereafter “CD-Reply”).

Some key issues conceptual issues are discussed in the CD paper, the FH comment and the CD-Reply, and I will discuss these papers as a group. These issues relate to how the loss of

⁶*Adams v. Burlington Northern*, 865 S.W. 2d. 748 (Mo. App. W.D. 1993); quotation from 751.

⁷891 F. Sup. 428 (1995).

retirement benefits should be measured. CD-Reply distinguishes two methods of valuing a defined benefit person loss: the "Payout Method" and the "Contribution Method." The former is defined "...as the difference between the present value of pension benefits that would have been received if a person were not injured and the present value of pension benefits that will be received given that an injury has occurred." The latter is defined "...as the present value of employee and employer pension contributions arising from the injury."

The first issue relates to the fact that both employees and employers contribute to funding Social Security (and Railroad Retirement) benefits. There must be some adjustment for the fact that the pension loss is smaller if the employee contributes toward the cost of providing it than if the employer funds the entire cost. This adjustment can be done in more than one way. The most straightforward is to compute the present value of the lost pension benefits and deduct the payroll taxes the employee saves because earnings are reduced by the injury. An equivalent result is obtained if the saved payroll taxes are deducted not from the pension loss itself but from the estimate of gross lost wages. In Federal cases, such a deduction may be required, as noted by the TI paper, because of the required deduction of income taxes. In states requiring that taxes be ignored, the deduction of payroll taxes is more problematic. A possible approach in this situation would be to make no deduction for taxes saved but instead compute the share of the benefits that are funded by employers and claim a loss of pension benefits only for the total pension loss multiplied by the employer's funding share (which in the case of Social Security--abstracting from tax incidence issues--is 50%). This might be dubbed the "50% benefit method." This approach is problematic, however, because it distorts the true financial loss. In the majority of personal injury cases, the net financial loss vis-à-vis the Social Security system is actually negative, whereas 50% of any positive gross loss is also positive and will therefore overstate the true loss. On the other hand, in the case of the death of an older worker, as will be shown below in Section III, the "50% benefit method" will understate the true loss because the present value of the pension loss is

chopped in half even though most of the worker's FICA tax cost has already been paid out of past wages. The "50% benefit method" may, however, be the only option if the direct approach of deducting tax savings is not available.

A second damage calculation issue relates to whether dependant and survivor benefits are included in the measure of loss. The Durham paper discusses some of these issues, as noted above. CD point out that the dependants of the worker may not be named in the lawsuit, raising the question of whether dependant, spouse and survivor benefits could legitimately be included as part of the pension loss. It is typical for spouses to be named as plaintiff's in wrongful death suits. Spouses are also named as co-plaintiffs in most serious personal injury lawsuits. If the spouse or other dependants are not named as plaintiffs, then claiming a loss of spouse or dependant's benefits would probably be denied. For this reason, showing calculations of worker and family-member losses separately is advisable where there is uncertainty about the latter claims.

A third damage calculation issue concerns the question of how the error involved in using the FICA tax method is to be measured. The employer and employee FICA tax of 7.65% is composed of the following components: 5.35% for OASI taxes goes into the OASI Trust Fund, which includes worker retirement benefits, spouse and child benefits and survivor benefits; 0.85% for disability benefits goes into the DI Trust Fund; and 1.45% goes for Medicare benefits. In 2000 and beyond, the first two percentages become 5.3% and 0.9%, respectively. The OASI and DI taxes are levied only up to the value set for maximum taxable earnings (\$72,600 in 1999); there is no maximum earnings limit for the 1.45% Medicare tax. Presumably, the FICA tax method should logically match up the tax rate to the benefits estimated, meaning that if the present value of the losses of worker retirement, spouse and survivor benefits, but not disability benefits, is estimated, this should be compared to the employer contribution of 5.3% of estimated lost earnings if the purpose is to compute the size of the error involved in using the FICA tax method. The taxes that the worker saves when earnings are reduced, however, equal the worker's 7.65% contribution of

lost earnings, since the worker would have had no choice but to pay such taxes if the injury had not occurred.

The paper by Fractor, McConaughy and Phillips (1997, hereafter FMP) "...examines the impact (the value to the affected individual) of varying lengths of unemployment or other labor market displacement upon future social security benefits. After performing almost 200 loss simulations using the benefit calculator program (ANYPIA) provided by the Social Security Administration...we find that under many plausible earnings loss scenarios, there is either zero or minimal loss in the present value of future anticipated social security benefits. Indeed, for periods of up to 9 years, the loss in social security benefits may be zero. Therefore, social security benefits are a non-issue for many earnings loss analyses." (p. 158). "Social Security benefits almost never matter as a tangible economic loss in most wrongful termination and personal injury cases....Simply put, in most situations, the disruption in Social Security contributions associated with unemployment spells of even many years is zero or quite small." (p. 159). As an illustration of FMP's findings, a worker who is age 30 could sustain 9 years of zero earnings and have no loss in Social Security retirement benefits provided the worker's earnings returned to the former path of earnings; permanent exit from the labor force at age 30 would result in a loss of about half of the Social Security retirement benefits, assuming that the worker had by age 30 obtained the required 40 quarters of coverage. Results of a similar nature are obtained for workers age 40, 50 and 60.⁸ The FMP results do not include benefits for other family members, nor do their loss estimates incorporate a deduction for the FICA tax saving experienced by the worker due to the years of zero

⁸Because most retirement benefits are based on an average of the highest 35 years of real earnings (the worker's "AIME" for "Average Indexed Monthly Earnings") substituting a few "zero years" into the career of a steady worker will have little or no impact on the average. In addition, even if the average is reduced, because benefits do not rise in proportion to this average but less slowly, reductions in the average do not cause proportionate reductions in benefits. Both of these features of the way retirement benefits are computed serves to lessen the impact of periods of zero earnings.

earnings. Their conclusion is as follows: "Given that many forensic economist value the loss of social security benefits at something approximately 6.2 or even 7.65 percent of earnings, it is clear that this particular category of "fringe" benefits has likely been seriously over-valued by most experts." (p. 160).

The last research to be reviewed is my own unpublished paper assessing Social Security losses that was presented at the Western Economic Association in 1997. This paper focuses on estimating losses of Social Security retirement benefits arising from a reduction in a worker's earnings. However, rather than estimate the impact of having earnings reduced to zero for some period of time (the assumption about earnings made by both RF and FMP), my 1997 paper examines the impact of an injury which has the effect of reducing the worker's annual earnings by 50 percent.⁹ Full-time, year-round workers with the average earnings of males (i) with a high school diploma and (ii) a bachelor's degree are assumed to experience an event that cuts the worker's earnings in half. This event is assumed to occur, alternatively, at ages 22, 40 and 55. The loss of Social Security retirement and spouse benefits is computed for each scenario and comparisons are made with the value that would be placed on these benefits by using the employer OASI tax of 5.3% of lost earnings. The "true" net loss to the worker is the present value of the loss Social Security retirement and spouse benefits net of the FICA taxes saved by the worker (= 7.65% of lost earnings).

Where only the worker's loss of Social Security retirement benefits is taken into account, this paper finds that the FICA tax method overstates the worker's true loss by more than 50% in all scenarios. For college graduates the true net loss is always negative (i.e., the worker experiences

⁹This assumption of a 50% reduction in earnings was considered to avoid having to deal with the issue of disability benefits, which would presumably be paid in personal injury cases where the worker was rendered unemployable. These payments would, of course, normally be considered a collateral source, unless the inappropriate estimating of lost Social Security retirement benefits triggered the "doctrine of curative admissibility," as described by TI.

a net financial gain vis-à-vis the Social Security system), whereas the FICA tax method would estimate a loss equal to 5.3% of lost earnings. True losses were overstated by between \$17,197 and \$76,186. For high school graduates, the true net loss was not always negative but it was always smaller than the loss computed by the FICA tax method. Losses were overstated by between \$4,355 and \$29,720. For both education groups, the smaller overstatements of loss were for the workers who were age 55 when earnings were reduced, whereas the largest overstatements were for workers whose earnings were reduced beginning at age 22. This result directly contradicts the advice provided by Speiser and Maher when they say: "As good a rule of thumb as can be put forward for the Social Security benefit is to value retirement pension at cost to the employer for younger workers, and at the discounted value of the expected pension for older workers."

Next spouse benefits were taken into account. It is appropriate to take such benefits into account if the spouse can be assumed to have earnings too low to qualify for a larger benefit than it would be possible to receive as a spouse.¹⁰ When spouse benefits were taken into account, college graduates still experienced a net gain vis-à-vis the Social Security system as a result of the earnings reduction in all but one scenario, whereas the FICA tax method estimates a loss. The overstatement of the loss for college graduates is between \$12,491 and \$56,742. However, for high school graduates, taking spouse benefits into account caused the FICA tax method to come very close in some scenarios to the true net loss. The scenarios where this occurred were those using a net discount rate of zero. The overstatement of loss for high school graduates was between -\$2,566 and \$23,262.

Summary of the Literature Review. Concerning the question of whether Social Security is a legitimate element of damages, forensic economists have been including those losses as an

¹⁰If the spouse has earnings sufficiently high to get a larger retirement benefit on her own account, there would be no impact on her benefit when her husband's earnings fall. In this event, the results based only on the worker's benefit would be relevant.

element of fringe benefits for many years. The widespread practice has been to measure the loss as the employer share of the FICA tax on lost earnings. The percentage used for this purpose has been either 7.65% (reflecting all OASDHI taxes) or 6.2% (reflecting the OASDI portion only). Few have used 5.3% (the OASI portion), even though what is being measured as a lost benefit is usually confined to OASI benefits. The question of legitimacy of this element of damages was broached by the TI paper, which found some federal cases where this damage element was disallowed on grounds of its noncontractual nature.

Estimates of the error involved in using the FICA tax method have focused on earnings losses due to personal injury or wrongful termination. Personal injury may cause total and permanent disability from gainful employment, at one extreme, or only a few weeks loss of earnings or no loss of earnings at all, at the other extreme. The variety of possible earnings patterns following an injury presents a vast number of alternative scenarios. The literature has examined the impact of having years where earnings are zero and the impact of having earnings cut in half. Research on the effects of these types of earnings reductions has found that the FICA tax method is likely to overstate, perhaps very substantially, the true loss of the worker vis-à-vis the Social Security system. If an injury or termination causes reduced earnings for only a few years, followed by a return of earnings to the level that would have been sustained but for the injury or termination, it is possible that no change will occur in the worker's AIME because the years when earnings are reduced may have been the lowest earnings years (even if the injury had never happened) which would have been eliminated from the AIME computation. Furthermore, even if an injury causes a permanent reduction in earnings, thereby reducing the worker's AIME, the impact on the worker's retirement benefit may be relatively small. A reduction a worker's annual post-injury earnings by X% per year after the injury may reduce the worker's AIME, but, except for the youngest of workers, the reduction will never be as great as X%. Furthermore, a given percentage reduction in a worker's AIME reduces the worker's retirement benefit by a smaller percentage due to the "pro-

poor” nature of the benefit formula. Hence, the retirement benefit, by the very nature of its computation, is relatively resistant (or “inelastic,” to use some economic jargon) to a reduction in earnings. At the same time, the worker experiences a loss-offsetting saving in FICA taxes due to the reduction in earnings—a saving proportional to the reduction in earnings. With the PIA resistant to much change and the FICA tax saving relatively responsive to reduced earnings, the overall effect is to reduce the net financial loss and often causes there to be a net financial gain. These considerations suggest that great caution should be exercised before incorporating into personal injury damage appraisals losses of Social Security benefits estimated using the FICA tax method. We now turn to an examination of the accuracy of the FICA tax method in death cases.

III. Estimating Social Security Benefit Losses in Death Cases.

When considering a death case rather than one involving personal injury, the focus shifts from the injured worker to the deceased worker’s survivors. The questions to be answered are: “What do the survivors of the deceased worker lose vis-à-vis the Social Security system?” and “How accurately does the FICA tax method measure that loss?”

The sources of information about the Social Security system used for this section are: 1) *The 1999 OASDI Trustees Report*; 2) the *1998 Annual Statistical Supplement to the Social Security Bulletin*; 3) *Social Security Handbook, 13th Edition, 1997*, 4) *1999 Social Security Explained* (Chicago: Commerce Clearinghouse, 1999); and 5) the Web Site of the Social Security Administration: <http://www.ssa.gov>.

Because the Social Security system is very complex, only illustrative examples are provided here to give a general idea about the way financial losses vis-à-vis the Social Security system can be estimated. The age and family circumstances (marital status, presence of children and other dependants) of a person at the time of death are important factors in assessing the

losses arising vis-à-vis the Social Security system. Losses are illustrated for a married worker with no children or other dependants who dies immediately after retiring at age 62, and, alternatively, at ages 55, 40 and 22.¹¹ Losses are shown for a worker who steadily earned the average annual earnings of workers covered by Social Security, as well as for a worker who steadily earned 45% and 160% of this average, and for a worker who always earned the maximum taxable earnings. It is assumed that everyone retires, or would have retired but for an early death, at age 62; it is assumed that everyone lives (or would have lived) to age 80. Husbands and wives are assumed to be the same age.¹² Losses resulting from the death of the husband are estimated. The reader will be able to see how computations could be made for the death of a wife.

Losses are computed as the present value of the reduction in Social Security benefits less the FICA taxes not paid on the deceased worker's lost earnings. For purposes of computing present values, the nominal yield on long-term government bonds over the 1955-98 period of 6.83% is used as the nominal interest rate.¹³ Annual rates of inflation and wage growth are assumed to

¹¹Not only spouses, but children, grandchildren and dependent parents of a retired, disabled or deceased worker may qualify for benefits on the basis of the worker's account. Total benefits are limited by the maximum family benefits payable on the worker's account. Benefits of a surviving divorced spouse are disregarded for purposes of the family maximum benefit provision. For succinctness, only spouse and widow's benefits are considered here.

¹²In actuality, it is well known that females outlive males. Hence, if a wife and husband were the same age, there will frequently be a period of years that the wife will continue to live following the death of her husband. Hence, with the assumption that husbands and wives are the same age, the typical situation will be for the husband to die and leave the wife to draw widow's benefits for a few more years. This benefit is ignored in the computations made in this paper.

¹³ See Table 40 of Gerald Martin's *Determining Economic Damages* (Costa Mesa, California, Revision 10, 1998). The long bond yield is used in this discussion for illustrative purposes and is not necessarily intended as a recommendation about the appropriate nominal discount rate. Some economists prefer to use the total rate of return on 3-month Treasury Bills. This rate over the 1955-98 period averaged 5.83% (See Table 48). Others choose a real (inflation-adjusted) discount rate based on the current yield of approximately 3.8% on Treasury Inflation-Indexed Securities (TIIS bonds), adjusted downward by 20 to 40 basis points for the fact that income taxes on bond income must be paid annually even though the bonds do not generate cash flow for investors until maturity. This adjustment brings the yield to about 3.5%. In its intermediate assumptions, the 1999 OASDI Trustee Report uses an ultimate real interest rate of 3%.

equal the “ultimate” intermediate projections for these rates in the 1999 OASDI Trustees Report of 3.3% for inflation and 4.2% for wage growth in employment covered by the Social Security system. These assumptions imply an ex post real interest rate of $0.034172314 = (1.0683)/(1.033) - 1$, or about 3.42%, which is also the net discount rate used for discounting to present worth a future stream of inflation indexed (i.e., COLA-adjusted) Social Security benefits. The net discount rate for discounting a stream of wages is $0.0252399 = (1.0683)/(1.042) - 1$, or about 2.52%.

To end all suspense about the results of the calculations, Table 1 shows the computation of losses, as well as the key quantities involved in the computations. Shown also in Table 1 are losses as a percentage of lost lifetime earnings for the various earnings levels.

Death of a Worker Immediately After Retiring. Let us consider first a situation where the FICA tax method fails completely—the death of a worker who had just retired from the labor force, with no plans for any future labor market participation. Spike Jones was age 62 on January 2, 1999 and had soon thereafter retired and begun to receive Social Security retirement benefits when he was killed in an accident. Sarah, Spike’s wife, is his same age and had begun to receive spouse benefits on the basis of her husband’s work record. (This implies that the retirement benefits she would have received based on her own work record would have been less than the spouse benefit. She is eligible for the higher of the two benefits but not both.) Spike had always earned a wage equal to the average of annual total wages as computed by Social Security (\$25,913.90 in 1996, \$27,426.00 in 1997 and estimated in the 1999 OASDI Trustees report as \$28,893.68 for 1998 using the intermediate forecasting assumptions). With this assumption about Spike’s earnings, his “average indexed monthly earnings” (AIME) can be computed as $(\$25,913.90 \times 33 + \$27,426.00 + \$28,993.68)/35 = \$26,045.10$, taking the 40 years when Spike was age 22 through 61 and discarding the lowest five years. Dividing \$26,045.10 by 12 and rounding to the next lowest dollar,

Spike's AIME is \$2,170.¹⁴ Spike's "primary insurance amount" (PIA) would have been computed using the 1999 PIA formula: 90% of the first \$505 of AIME, plus 32% of AIME over \$505 up to \$3,043, plus 15% of AIME over \$3,043. Spike's PIA would therefore have been computed as $90\% \times \$505 + 32\% \times (\$2,170 - \$505) = \987.20 . (The result from this formula must be rounded to the next lowest dime.)

The figure of \$987.20 (plus any cost-of-living adjustments in 1999, 2000 and 2001) would have been Spike's monthly Social Security retirement benefit if Spike had lived and waited to retire at age 65 (the normal retirement age for someone born before 1938) in 2002. His retirement at age 62 resulted in a 20% early retirement penalty (5/9ths of 1% per month for each month before age 65), reducing his benefit to \$789.70. Sarah's benefit as Spike's wife is computed as 50% of Spike's PIA, or \$493.60, but because Sarah began drawing this benefit at age 62, she pays a penalty of 25% (25/36ths of 1% per month for each month before age 65) and receives \$370.20.¹⁵ Hence, prior to Spike's death, the couple was eligible to receive $\$789.70 + \$370.20 = \$1,159.90$ per month.

At Spike's death, his Social Security retirement benefit terminates. (The benefit actually terminates with the payment made in the month prior to the month of death.) Sarah's spouse benefit also terminates. She becomes eligible to receive a widow's benefit equal to Spike's PIA, but reduced by 19/40ths of 1% for each month that she is under age 65, starting from age 60. Using

¹⁴The assumption that Spike always earned the national average wage simplifies the AIME computation because this means that Spike's earnings for the years prior to and including 1996 can be set at the level of average wages for 1996, namely \$25,913.90. All wages in years up to the second year before the year of eligibility are indexed by being multiplied by the ratio of average wages in the indexing year (1996 in Spike's case) to the wages in the year to be indexed. Wages for years after the indexing year (1997 and 1998, in Spike's case) are counted at their nominal value. Out of the 40 years between age 22 and 61, the five with the lowest indexed wages are disregarded and AIME is computed using the remaining 35. In Spike's case, all the indexed wages in up to an including 1996 are the same, so it is immaterial which five of these years are disregarded.

¹⁵If Sarah's PIA based on her own work record exceeds \$493.60, she would draw that benefit instead of the spouse benefit and the penalty for early retirement at age 62 would be 20%.

this formula, the widow's benefit would be equal to the husband's PIA of \$987.20 reduced by 17.1% (= 19/40% for each of the 36 months prior to Susan's 65th birthday) to \$818.30. However, for a widow aged 62-64 whose husband retired before age 65, the widow's benefit is limited to the amount the husband would be receiving if living, but not less than 82.5% of his PIA. This latter rule applies to Sarah's situation, meaning that her benefit is limited to the greater of \$789.70 or 82.5% of \$987.20 = \$814.40. Thus, the loss of monthly benefits flowing into the Jones family due to the Spike's death is \$1,159.90 - \$814.40 = \$345.50. While the net loss of Social Security benefits could be computed as the present value of the \$345.50 monthly difference over what would have been Spike's life expectancy, the loss is instead computed as the difference between the present value of the \$1,159.90 stream and the present value of the \$814.40 stream. This is done to make the "death at age 62" calculations comparable to those for a death at age 55, 40 and 22, in all of which the monthly payment stream of total family benefits but for the death will have a different length from that of the monthly payment stream of widow's benefits, given the death.

In computing these present values, it should be taken into account that Social Security retirement benefits are indexed to the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). This indexing is assumed to cause future benefits to grow at an average rate of 3.3% per year. With a life expectancy to age 80 and an annual net discount rate equal of 3.4172314%, the present value of the benefits stream but for Spike's death is \$186,932.39. The present value of Sarah's widow's benefit is \$131,250.74. The difference of \$55,681.64 is the net loss of Social Security benefits.

Assuming that Spike would have had no labor market earnings beyond his date of death, the scenario just described is one in which it is obvious that the FICA tax method completely fails. If Spike has no future earnings, no FICA taxes would have been paid by his employers and the FICA tax method would estimate a zero loss of Social Security benefits arising from Spike's death, when in fact the true loss is \$55,681.64.

Effect of Different Levels of Earnings on the Loss Computation. The Social Security Administration often provides illustrations of retirement benefit levels for steady levels of pre-retirement earnings of 45%, 100% and 160% of the average annual wage, and for a worker who always earned the maximum taxable earnings. Earnings of 45% of the average 1997 wage of \$27,426 would be \$12,342 or about \$5.93 per hour (assuming payment for 2,080 hours). Earnings equal to 160% of the 1997 average would be \$43,882, not far from the average earnings of \$43,709 in 1997 for males of all ages and education levels combined who worked full time the year round.¹⁶ In 1999, maximum taxable earnings are \$72,600; 1998 and 1997 values were \$68,400 and \$65,400, respectively. Thus, in 1997, maximum taxable earnings were about 2.38 times the size of average covered earnings of \$27,426.

If Spike's income over his working life had been only 45% of the average Social Security annual wage, Spike's AIME would be 45% of \$2,170, or \$976.50 per month. Based on the 1999 PIA formula, his PIA would have been \$605.30 and his age 62 retirement benefit would have been \$484.20.¹⁷ The spouse benefit would have been $\$605.30 \times 0.5 \times 0.75 = \226.90 , for a total family benefit of \$711.10 per month. Given Spike's death, Sarah's widow's benefit at age 62 would be limited to the greater of \$484.20 or 82.5% of \$605.30 = \$499.30. The net loss of benefits therefore would have been $\$711.10 - \$499.30 = \$211.80$ per month. The present value the present value of total family benefits stream but for Spike's death is \$114,602.65. The present value of Sarah's

¹⁶U.S. Bureau of the Census, Current Population Reports, P60-200, *Money Income in the United States: 1997 (With Separate Data on Valuation of Noncash Benefits)*, U.S. Government Printing Office, Washington, D.C., 1998, Table 9.

¹⁷The fact that benefits are reduced by only about 39% when earnings are cut by 55% illustrates the "pro-poor" benefit structure of Social Security. Social Security retirement benefits are a non-linear, concave function of earnings (and therefore "contributions" in the form of FICA taxes) and give relatively high benefits to low-income workers. Payroll taxes have to be interpreted in part as a "donation" to the less fortunate and not exclusively as a personal retirement investment. This "pro-poor" benefit structure for Social Security is at least partly offset by the "pro-rich" benefit structure of many private retirement plans which give relatively more generous benefits to higher income workers.

widow's benefit is \$80,468.44. The difference of \$34,134.22 is the net loss of Social Security benefits. Using similar procedures, the loss if Spike's earnings had been 160% of the average is computed as \$75,069.49.

With earnings equal to maximum taxable earnings, Spike's AIME would have to be computed by applying the factors for indexing earnings prior to the indexing year.¹⁸ Spike's AIME and PIA would be \$4,463 and \$1,479.60, respectively, and his age 62 retirement benefit would be \$1,163.60. The spouse benefit would have been $\$1,479.60 \times 0.5 \times 0.75 = \554.80 , for a total family benefit of \$1,738.40 per month. Given Spike's death, Sarah's widow's benefit at age 62 would be limited to the greater of \$1,183.60 or 82.5% of \$1,479.60 = \$1,220.60. As shown in Table 1, the net loss of Social Security benefits is estimated to be \$83,449.94.

Death of a Worker at Age 55. Next consider the case where Spike is not age 62 but age 55 in 1999 and still employed at the time of his death. Assume that his wife Sarah is also age 55. First assume that Spike has always earned the Social Security average annual wage and will always do so in the future until he would have retired. Because the "bend" points in the PIA formula are indexed to the change in the Social Security average level of annual wages, Spike's future benefit at 62 will exceed today's benefit level for 62-year-olds by the growth in average wages from the time Spike is 55 until he is age 62. At a growth rate of 4.2%, by the year 2006, the bend points will have grown to 1.33375 times their size in 1999, or to \$673 and \$4,058.¹⁹ In addition, Spike's

¹⁸Spike's AIME cannot be computed in the same manner as when his earnings were less than the maximum taxable earnings because these maximum earnings were not indexed to the growth of average wages until 1974. For someone retiring in 1999 or before, the instructions and worksheet on pp. 60-61 of the *1998 Annual Statistical Supplement to the Social Security Bulletin* can be used to compute AIME, or the SSA program known as "AnyPIA" can be used to compute the PIA of a worker with any earnings history, including one with maximum taxable earnings. This program can be downloaded from the SSA web site.

¹⁹These figures differ slightly from the figures of \$649 and \$3,912 shown in the 1999 OASDI Trustees projections due to the use of 4.2% as a growth rate in all years between 1999 and 2006 rather than allowing for the rate ultimately to converge to 4.2% as is done in the Trustees report.

wages would have grown from an estimated \$28,893.68 in 1998 to \$35,492.90 in 2003 (Spike's indexing year), and to \$38,536.95 the year before his death in 2005. Under the conditions described, Spike's "average indexed monthly earnings" (AIME) can be computed as $(\$35,492.90 \times 33 + \$36,983.64 + \$38,536.95)/35 = \$35,622.47$, taking the 40 years when Spike was age 22 through 61 and discarding the lowest five years. Dividing \$35,622.47 by 12 and rounding to the next lower dollar, Spike's AIME is \$2,968. Spike's "primary insurance amount" (PIA) would have been computed using the 2003 PIA formula: 90% of the first \$673 of AIME, plus 32% of AIME over \$673 up to \$4,058, plus 15% of AIME over \$4,058. Spike's PIA would there be $90\% \times \$673 + 32\% \times (\$2,968 - \$673) = \$1,340.40$.

The figure of \$1,340.40 (plus any cost-of-living adjustments in 2006, 2007, 2008 and 2009) would have been Spike's monthly Social Security retirement benefit if Spike had lived and waited to retire at age 66 (the normal retirement age for someone born in 1943-54) in 2010. His retirement at age 62 would have resulted in a 25% early retirement penalty (5/9ths of 1% per month for each of the first 36 months of benefits immediately preceding the age at which 100% of PIA is payable, and 5/12ths of 1% per month each of the 12 earlier months of benefit receipt), reducing his benefit to \$1,005.30. Sarah's benefit as Spike's wife is again computed as 50% of Spike's PIA, or \$670.20. However, because it is assumed that Sarah would have begun drawing this benefit at age 62, she pays a penalty of 30% (25/36ths of 1% per month for each of the first 36 months of benefits immediately preceding the age at which 50% of PIA is payable, and 5/12ths of 1% per month each of the 12 earlier months of benefit receipt) and receives \$469.10. Hence, but for Spike's death, the couple would have received $\$1,005.30 + \$469.10 = \$1,474.40$ per month.

Because of Spike's death, his Social Security retirement benefit and the wife benefit will never be paid. Instead, Sarah becomes eligible to receive a widow's benefit equal to 100% of Spike's PIA when she attains normal retirement age, which based on her birth in 1944, is age 66.

At age 60, she can draw a reduced benefit equal to 71.5% of Spike's PIA.²⁰ Because he died in 1999, Spike's PIA given his death at age 55 is computed in the same manner as in the earlier example where he is assumed to die at age 62, except that the number of years used in computing Spike's AIME is now 28 instead of 35. Spike's AIME is computed as $(\$25,913.90 \times 26 + \$27,426.00 + \$28,893.68)/336 = \$2,172$. Spike's PIA using the 1999 PIA formula is $90\% \times \$505 + 32\% \times (\$2,172 - \$505) = \987.90 . Adjusted for inflation to the level it will be in 5 years when Sarah is age 60, Spike's PIA will grow by a factor of 1.17626 to \$1,162.00. Assuming that Sarah elects to begin drawing the widow's benefit at age 60, her benefit will be $71.5\% \times \$1,162.30 = \830.80 .

To compute the loss of Social Security benefits resulting from Spike's death, it is necessary, as before, to compute the present value of the retirement and spouse benefit but for Spike's death and deduct the present value of the widow's benefit that will be received by Sarah given Spike's death. The retirement and spouse benefit but for Spike's death were estimated at \$1,474.40 per month, beginning when Spike and Sarah would have reached age 62 in 2006. As of 2006, the present value of these monthly benefits over Spike's 18-year life expectancy is \$237,617.99 (= \$1,474.40 for 216 months using an interest rate of $3.4172314/12 = 0.2847693\%$ per month). In 1999, 7 years earlier, the figure of \$237,617.99 has a present worth of \$149,632.77, using the nominal interest rate of 6.83%. The present value of the widow's benefit, given Spike's death, is \$144,307.36 (= \$830.80 for 240 months using an interest rate of 0.2847693% per month). Note that this present value is taken over a 20-year period instead of an 18-year period because of

²⁰Remarriage can affect Sarah's entitlement to benefits. To quote the *Social Security Handbook (13th Edition, 1997 at 406)*: The remarriage of a widow(er) or a surviving divorced spouse after age 60, or the remarriage of a disabled widow(er) or a disabled surviving divorced spouse after age 50 and after the date he or she became disabled, will not prevent that individual from becoming entitled to benefits on his or her prior deceased spouse's Social Security earnings record. A widow(er)'s or a surviving divorced spouse's remarriage before age 60 will prevent his or her entitlement unless the subsequent marriage ends....Likewise, the remarriage of a disabled widow(er) or disabled surviving divorced spouse prior to age 50 will preclude entitlement unless the marriage ends."

the assumption that the widow's benefit will be drawn when Sarah reaches age 60. The present value as of 1999 of the \$144,307.36 is \$103,710.41. The net loss of Social Security benefits is therefore \$45,922.36 (= \$149,632.77 - \$103,710.41).

The figure of \$45,922.36 is not the overall net loss vis-à-vis the Social Security system, however, because no account has been taken of the FICA taxes that will be saved because Spike does not have earnings from age 55 to age 62. Spike's base wage in 1999 would have been an estimated 28,893.68 in 1998 x 1.042 = \$30,107 in 1999. Using this base and a net discount rate of 2.524%, the present value of Spike's lost earnings over the 7 years are estimated to be \$192,997.04. On these earnings he would have paid FICA taxes of \$14,764.27. The net financial loss vis-à-vis the Social Security system is therefore the net loss of Social Security benefits of \$45,922.36 less the taxes saved of \$14,764.27, or \$31,158.09. The component of FICA taxes for OASI is currently 5.35% and this percentage will be reduced to 5.3% in 2000 and beyond. (Spike's death does not affect Sarah's access to disability benefits based on Spike's work record, and Sarah's access to Medicare is also unaffected by Spike's death.) The true loss, as a proportion of Spike's lost earnings, is $\$31,158.09/\$192,997.04 = 16.14\%$. These computations, as well as similar ones for the other earnings levels, are shown in the section of Table 1 labeled "Death at Age 55 in 1999."

Death of a Worker Ages 40 and 22. The computations for the scenarios where Spike dies at ages 40 and 22, respectively are shown in the parts of Table 1 labeled "Death at Age 40 in 1999" and "Death at Age 22 in 1999," respectively. These computations take into account the higher normal retirement age and penalties for early retirement for younger workers. Other aspects of the computations are the same as in "Death at Age 62" and "Death at Age 55" scenarios and will not be repeated.

Summary of the Primary Results and Assessment of the FICA Tax Method for Use in Death Cases. Table 1 indicates that the losses vis-à-vis the Social Security system vary with age

and income. The FICA tax method is unusable in the scenario involving the death of a recently retired worker, and the losses in this situation must be estimated directly. These losses vary with the earnings level of the worker. The losses arising from the death of a worker at age 55 are significantly underestimated by the FICA tax method. Using the OASI (in the year 2000 and beyond) tax rate on employers and employees of 5.3%, the FICA tax method would underestimate the loss, as a percentage of lost money earnings, by as much as $24.29\% - 5.3\% = 18.99\%$ for a worker with low earnings and $8.91\% - 5.3\% = 3.61\%$ for a worker who had always earned the maximum taxable earnings. For a worker who dies at age 40, the FICA tax method produces an estimate relatively close to the true loss if the worker has a low to average income, underestimating the loss for the lower income worker by only $5.79\% - 5.3\% = 0.49\%$, and overestimating the loss for the worker with average earnings by $5.3\% - 3.53\% = 1.77\%$. However, for workers with above-average earnings, the FICA tax method more severely overestimates the loss—which in the two high earnings examples is actually a financial gain. The overestimate is $5.3\% + 2.25\% = 7.55\%$ of lost earnings for the worker with earnings of 160% of the average, and $5.3\% + 3.58\% = 8.88\%$ for the worker with maximum taxable earnings. For the worker who dies at age 22, this pattern of overestimation exists for all earnings levels. The death causes a financial gain, and the FICA tax method overestimates the true “loss” by between $5.3\% + 3.27\% = 8.57\%$ for the worker with lower earnings, and $5.3\% + 5.93\% = 11.23\%$ for the worker who earned maximum taxable earnings.

Several conclusions can be reached about the use of the FICA tax method in death cases. The method a) cannot be used for workers who had already retired, b) underestimates the true financial loss vis-à-vis the Social Security system when there is the death of a worker nearing retirement, c) comes closest to being accurate for mid-career (e.g., 40-year-old) workers with earnings below the level of average Social Security earnings, and d) significantly overestimates the financial loss for the youngest workers.

IV. Conclusion

The major conclusion of this paper is that the FICA tax method provides inaccurate estimates of Social Security benefit loss arising from reductions in earnings. This result has been found in earlier studies, reviewed in Section II, for reductions in earnings arising from personal injury and wrongful termination. The results in Section III suggest that the FICA tax method is also unreliable for use in death cases. Rather than use the FICA tax method, it would be preferable to follow one of two alternative courses of action: (a) directly compute the present value Social Security benefit losses, taking account of any tax saving caused by the reduced earnings; or (b) ignore Social Security benefits entirely when computing the loss of fringe benefits. Which alternative is preferable will depend on the particular circumstances.

References

- 1998 Annual Statistical Supplement to the Social Security Bulletin* (Washington, D.C.: Social Security Administration, Sept. 1998)
- 1999 OASDI Trustees Report* (Washington, D.C.: Social Security Administration, 1999)
- 1999 Social Security Explained* (Chicago: Commerce Clearinghouse, 1999)
- Michael L. Brookshire and Stan V. Smith, *Economic/Hedonic Damages: The Practice Book for Plaintiff and Defense Attorneys* (Cincinnati, Ohio: Anderson Publishing Co., 1990)
- James Ciecka and Thomas Donley, "The Calculation of Pension Benefits for Railroad Workers," *Litigation Economics Digest*, Vol. 2, No. 2 (Summer, 1997), pp. 136-51.

- _____, "Regarding the Calculation of Pension Benefits for Railroad Workers: Reply," *Litigation Economics Digest*, Vol. 3, No. 1 (Summer, 1998), pp. 79-82.
- Stephen E. Durham, "The Correct Value of Social Security Contributions in Personal Injury and Wrongful Death Settlements: A Comment," *Journal of Forensic Economics*, Vol. 6, No. 2 (Spring/Summer 1993), pp. 151-2.
- David T. Fractor, Daniel L. McConaughy, and G. Michael Phillips, "The Impact of Earnings Loss on Future Social Security Benefits," *Litigation Economics Digest*, Vol. 2, No. 2 (Summer, 1997), pp. 158-67.
- Eric Frye and David Hatcher, "The Calculation of Lost Pension Benefits: A Comment," *Litigation Economics Digest*, Vol. 3, No. 1 (Summer, 1998), pp. 69-78.
- Elizabeth M. King and James P. Smith, *Computing Economic Loss in Cases of Wrongful Death* (Santa Monica, California: The Rand Corp., 1988)
- Gerald D. Martin, *Determining Economic Damages* (Costa Mesa, California: James Publishing, Inc., 10th Revision, 1998)
- James D. Rodgers, "Estimating the Loss of Social Security Retirement Benefits Due to Reduced Earnings," presented at the NAFE Sessions of the Western Economic Association Meetings in Seattle, Washington, July 10-13, 1997.
- Robert Rosenman and Rodney Fort, "The Correct Value of Social Security Contributions in Personal Injury and Wrongful Death Settlements," *Journal of Forensic Economics*, Vol. 5, No. 2 (Spring/Summer 1993), pp. 149-58.
- Social Security Handbook, 13th Edition, 1997* (Washington, D.C.: Social Security Administration, 1997)
- Stuart M. Speiser and John Maher, *Recovery for Wrongful Death and Injury Economic Handbook* (New York, New York: Clark Boardman Callaghan, 1995)

Paul C. Taylor and Thomas R. Ireland, "Accounting for Medicare, Social Security Benefits and Payroll Taxes in Federal Cases: Federal Case Law and Errors by Many Forensic Economists," *Litigation Economics Digest*, Vol. 2, No. 1 (Fall 1996), pp. 79-88.

Web Site of the Social Security Administration: <http://www.ssa.gov>

Table 1

Illustrative Estimates of Social Security Losses Arising from Death of a Married Worker

(1)	(2)	(3)	(4)	(5)
Item Description	Steady Earnings at 45% of Average SS Wage	Steady Earnings Equal to Average SS Wage	Steady Earnings at 160% of Average SS Wage	Steady Earnings Equal to Maximum Taxable Earnings
Death at Age 62 in 1999:				
1. AIME (Working Through 1998)	\$976.50	\$2,170.00	\$3,472.00	\$0.00
2. PIA (Working Through 1998)	\$605.30	\$987.20	\$1,331.00	\$810.20
3. Age 62 Benefit	\$484.20	\$789.70	\$1,064.70	\$648.10
4. Spouse Benefit	\$302.60	\$493.60	\$665.50	\$405.10
5. Spouse's Age 62 Benefit	\$226.90	\$370.20	\$499.10	\$303.80
6. Total Family Benefit (TFB): 3 + 5	\$711.10	\$1,159.90	\$1,563.80	\$951.90
7. Widow's Benefit (Husband's PIA Working Through 1998)	\$605.30	\$987.20	\$1,331.00	\$810.20
8. Widow's Age 62 Benefit	\$499.30	\$814.40	\$1,098.00	\$668.40
9. PV of TFB as of Date of Retirement	\$114,602.65	\$186,932.39	\$252,025.92	\$153,410.59
10. PV of TFB as of Date of Death	\$114,602.65	\$186,932.39	\$252,025.92	\$153,410.59
11. PV of Widow's Benefit as of Beginning Date of Payments	\$80,468.44	\$131,250.74	\$176,956.43	\$107,721.02
12. PV of Widow's Benefit as of Date of Husband's Death	\$80,468.44	\$131,250.74	\$176,956.43	\$107,721.02
13. Net Loss of Social Security Benefits = 10 - 12	\$34,134.22	\$55,681.64	\$75,069.49	\$45,689.57
14. PV of Lost Earnings	\$0.00	\$0.00	\$0.00	\$0.00
15. PV of FICA Taxes Saved = 7.65% of 14	\$0.00	\$0.00	\$0.00	\$0.00
16. Net Financial Loss vis-a-vis SS System: 13 - 15	\$34,134.22	\$55,681.64	\$75,069.49	\$45,689.57
17. Net Loss as a % of Lost Earnings: 16/14 x 100	infinite	infinite	infinite	infinite
Death at Age 55 in 1999:				
1. AIME (Working Through 2005)	\$1,335.60	\$2,968.00	\$4,748.80	\$0.00
2. PIA (Working Through 2005)	\$818.00	\$1,340.40	\$1,792.90	\$1,080.60
3. Age 62 Benefit	\$613.50	\$1,005.30	\$1,344.60	\$810.40
4. Spouse Benefit	\$409.00	\$670.20	\$896.40	\$540.30
5. Spouse's Age 62 Benefit	\$286.20	\$469.10	\$627.40	\$405.20
6. Total Family Benefit (TFB): 3 + 5	\$899.70	\$1,474.40	\$1,972.00	\$1,215.60
7. Widow's Benefit (Husband's PIA Working Through 1998)	\$712.20	\$1,162.00	\$1,566.30	\$953.00
8. Widow's Age 60 Benefit	\$509.20	\$830.80	\$1,119.90	\$681.30
9. PV of TFB as of Date of Retirement	\$144,997.90	\$237,617.99	\$317,812.45	\$195,909.14
10. PV of TFB as of Date of Death	\$91,308.06	\$149,632.77	\$200,132.82	\$123,367.88
11. PV of Widow's Benefit as of Beginning Date of Payments	\$88,446.45	\$144,307.36	\$194,523.13	\$118,339.68
12. PV of Widow's Benefit as of Date of Husband's Death	\$63,564.44	\$103,710.41	\$139,799.33	\$85,048.03
13. Net Loss of Social Security Benefits = 10 - 12	\$27,743.62	\$45,922.36	\$60,333.49	\$38,319.85
14. PV of Lost Earnings	\$86,848.67	\$192,997.04	\$308,795.27	\$465,389.62
15. PV of FICA Taxes Saved = 7.65% of 14	\$6,643.92	\$14,764.27	\$23,622.84	\$35,602.31
16. Net Financial Loss vis-a-vis SS System: 13 - 15	\$21,099.69	\$31,158.09	\$36,710.65	\$2,717.54
17. Net Loss as a % of Lost Earnings: 16/14 x 100	24.29%	16.14%	11.89%	0.58%

(Continued)

Table 1
(Continued)
Illustrative Estimates of Social Security Losses Arising from Death of a Married Worker

(1)	(2)	(3)	(4)	(5)
Item Description	Steady Earnings at 45% of Average SS Wage	Steady Earnings Equal to Average SS Wage	Steady Earnings at 160% of Average SS Wage	Steady Earnings Equal to Maximum Taxable Earnings
Death at Age 40 in 1999:				
1. AIME (Working Through 2020)	\$2,475.90	\$5,502.00	\$8,803.20	\$0.00
2. PIA (Working Through 2020)	\$1,516.40	\$2,484.70	\$3,323.50	\$2,003.00
3. Age 62 Benefit	\$1,061.40	\$1,739.20	\$2,326.40	\$1,402.00
4. Spouse Benefit	\$758.20	\$1,242.30	\$1,661.70	\$1,001.50
5. Spouse's Age 62 Benefit	\$492.80	\$807.40	\$1,080.10	\$650.90
6. Total Family Benefit (TFB): 3 + 5	\$1,554.20	\$2,546.60	\$3,406.50	\$2,052.90
7. Widow's Benefit (Husband's PIA Working Through 1998)	\$840.50	\$1,182.40	\$2,549.00	\$1,550.90
8. Widow's Age 60 Benefit	\$600.90	\$845.40	\$1,822.50	\$1,108.80
9. PV of TFB as of Date of Retirement	\$250,478.76	\$410,416.43	\$549,000.06	\$330,850.50
10. PV of TFB as of Date of Death	\$58,549.05	\$95,934.26	\$128,327.98	\$77,335.83
11. PV of Widow's Benefit as of Beginning Date of Payments	\$104,374.45	\$146,843.34	\$316,562.55	\$192,595.09
12. PV of Widow's Benefit as of Date of Husband's Death	\$27,843.87	\$39,173.26	\$84,449.09	\$51,378.41
13. Net Loss of Social Security Benefits = 10 - 12	\$30,705.18	\$56,761.00	\$43,878.89	\$25,957.42
14. PV of Lost Earnings	\$228,534.88	\$507,855.28	\$812,568.45	\$1,224,633.16
15. PV of FICA Taxes Saved = 7.65% of 14	\$17,482.92	\$38,850.93	\$62,161.49	\$93,684.44
16. Net Financial Loss vis-a-vis SS System: 13 - 15	\$13,222.26	\$17,910.07	(\$18,282.59)	(\$67,727.01)
17. Net Loss as a % of Lost Earnings: 16/14 x 100	5.79%	3.53%	-2.25%	-5.53%
Death at Age 22 in 1999:				
1. AIME (Working Through 2038)	\$4,798.80	\$10,664.00	\$17,062.40	\$0.00
2. PIA (Working Through 2038)	\$3,054.10	\$4,931.00	\$6,759.90	\$4,200.50
3. Age 62 Benefit	\$2,137.80	\$3,451.60	\$4,731.90	\$2,940.30
4. Spouse Benefit	\$1,527.00	\$2,465.50	\$3,379.90	\$2,100.20
5. Spouse's Age 62 Benefit	\$992.50	\$1,602.50	\$2,196.90	\$1,365.10
6. Total Family Benefit (TFB): 3 + 5	\$3,130.30	\$5,054.10	\$6,928.80	\$4,305.40
7. Widow's Benefit (Husband's PIA Working Through 1998)	\$2,079.30	\$3,393.50	\$4,826.60	\$2,782.30
8. Widow's Age 60 Benefit	\$1,486.60	\$2,426.30	\$3,451.00	\$2,295.30
9. PV of TFB as of Date of Retirement	\$504,486.98	\$814,531.40	\$1,116,662.74	\$693,869.03
10. PV of TFB as of Date of Death	\$35,902.18	\$57,966.72	\$79,468.11	\$49,379.69
11. PV of Widow's Benefit as of Beginning Date of Payments	\$258,217.77	\$421,440.72	\$599,427.90	\$398,686.43
12. PV of Widow's Benefit as of Date of Husband's Death	\$20,972.17	\$34,228.97	\$48,684.90	\$32,380.89
13. Net Loss of Social Security Benefits = 10 - 12	\$14,930.01	\$23,737.75	\$30,783.21	\$16,998.80
14. PV of Lost Earnings	\$340,987.24	\$757,749.43	\$1,212,399.09	\$1,827,223.45
15. PV of FICA Taxes Saved = 7.65% of 14	\$26,085.52	\$57,967.83	\$92,748.53	\$139,782.59
16. Net Financial Loss vis-a-vis SS System: 13 - 15	(\$11,155.52)	(\$34,230.08)	(\$61,965.32)	(\$122,783.79)
17. Net Loss as a % of Lost Earnings: 16/14 x 100	-3.27%	-4.52%	-5.11%	-6.72%