# PROJECTION OF ECONOMIC LOSS: INFLATION V. PRESENT VALUE

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## INTRODUCTION

Many attorneys have been fearful of considering the impact of inflation on future earnings in wrongful death or personal injury cases because of the Eighth Circuit ruling in *Riha v. Jasper Blackburn Corp.*.[1] The Appeals court ruled that the evidence of future inflation projected over the plaintiff's lifetime to the year 2005 was speculative and inadmissable.[2] But the court in the *Riha* case did not hold that the jury could never consider inflation and future wage increases in determining damages. Therefore, the purpose of this paper is to review what the court actually said in the *Riha* case concerning inflation and future wage increases. The next step will be to explain how the Nebraska Supreme Court clarified the question of wage increases in *Ott v. Frank*[3] and how The United States Court of Appeals for The Eighth Circuit clarified the same question in *Taenzler v. Burlington Northern*.[4] The last portion of the paper will explain how an economist implements the decisions from these cases.

The first step is to review the Eighth Circuit Court's *Riha* decision in which the court cited its interpretation of the Nebraska rule on damages:

> The measure of damages in Nebraska for personal injury resulting in permanent disability is that amount which will compensate the plaintiff for the diminution of his earning capacity reduced to its *present* value. [citations omitted]. The Nebraska Supreme Court has considered the place of inflationary considerations in this measure of damages. In Johnson v. Schrepf, 154 Neb. 317, 47 N.W. 2d 853 (1951) it observed:
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> "Economic condition, including the low purchasing power of money for necessities of life, is a factor in determining the amount of a verdict. . . . The period of inflation *now* existing is a factor which the jury could consider

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1. 516 F.2d 840 (8th Cir. 1975).
2. *Id.* at 843-45.
3. 202 Neb. 820, 277 N.W.2d 251 (1979).
4. 608 F.2d 796 (8th Cir. 1979).

in arriving at the amount of the verdict. We must assume that the jury gave consideration to this fact as it had a right to do. (Emphasis added.)"

* * *

Notwithstanding the fact that jurors may consider inflation as a general factor, however, the Nebraska court has held that an instruction on future inflation is improper. In Segebart v. Gregory, 160 Neb. 64, 69 N.W. 2d 315 (1955), the court said:

"The value of money is a representative one. It is fixed by the value of the thing or things for which it can be exchanged. *Whether that value has depreciated or appreciated with reference to some other period is not material.* The value of money, i.e., its purchasing power is elemental within the knowledge and experience of men generally. It is one of the facts of life which jurors are presumed to know. (Emphasis added.)"

* * *

We believe the Nebraska Supreme Court would also prohibit direct testimony on inflation over a person's life or work expectancy.[5]

The court also cited different cases from other circuits:

We do not hold, however, that the jury may never consider inflation and future increases in income in determining damages. Ideally, the damage award should compensate appellant for the financial loss she will suffer as a result of the death of her husband. If a jury is not permitted to consider decreases in the purchasing power of money, appellant would be woefully damaged if inflation should continue at its present or any other substantial rate. Some consideration of probabilities is inevitable in any fair award of damages. The court's role is to keep such extrapolations within reasonable bounds and insure that they conform to the evidence. [citation omitted].

Even though no expert testimony on inflation and future increases was admitted, it was still error for the district court to charge the jury that it should not consider "future increases or decreases in the purchasing power of money." [citation omitted]. Inflation is a fact of life within the common experience of all jurors. Admittedly, if the jury considers this issue without expert testimony, their calculations will be even more imprecise. There is always a chance that the verdict may be too generous. But if the jurors should be prohibited from applying their common knowledge of inflation in reaching a verdict, the party enti-

5. 516 F.2d at 843.

> tled to recovery could be grievously under-compensated. The court can always rectify an exorbitant verdict through its power of remittitur. [citations omitted].[6]

The Eighth Circuit said it found "this view more accurately reflects both the federal and the Nebraska rule."[7]

In April, 1979, the Nebraska Supreme Court in *Ott v. Frank*[8] stated "that prospective increases in wages that a worker might have merited had he lived, and his potential liability for income taxes, are likewise proper matters to be covered in the evidence, but are not subject for special instructions."[9] The economist in this case used the fact that the decedent had been granted 8 percent increases the prior two years before his death and projected that his wages would increase 8 percent annually through his remaining 8.2 years of work life expectancy.

In December, 1979, The United States Court of Appeals for the Eighth Circuit affirmed the judgment of the district court in the *Taenzler v. Burlington Northern* case.[10] This is a case in which I testified as an economist in determining future lost earning capacity. The court stated that,

> Dr. Sherman considered how to calculate the present value of this projected earnings loss. However, in Dr. Sherman's opinion, the present value of Taenzler's lost earning capacity equalled the full amount of future lost earnings. Dr. Sherman recognized in theory that the amount of lost future earnings should be adjusted to reflect the anticipated return on investment of the damage award. But annual increases in railroad employee's earnings had historically exceeded the annual return on a safe investment (*i.e.*, long-term U.S. Treasury bonds). Thus, Dr. Sherman concluded that, because the anticipated return on investment would counterbalance future wage increases, Taenzler's lost future earning capacity would equal the unadjusted amount of lost future earnings.[11]

In a similar vein, the district court for the southern district of New York has stated that,

> [C]onvincing testimony not refuted was offered at trial by plaintiff demonstrating the steady wage increases in recent time for work equivalent to that rendered by plaintiff, and the strong likelihood that similar increases would con-

6. *Id.* at 845.
7. *Id.*
8. 202 Neb. 820, 277 N.W.2d 251 (1979).
9. *Id.* at 823-24, 277 N.W.2d at 253.
10. 608 F.2d at 802.
11. *Id.* at 799.

> tinue. It might very well follow, therefore, that the wage increases would offset the discount calculation.[12]

There is little doubt, therefore, of the probative value of testimony concerning potential future pay increases.[13] Because the evidence is relevant, it is admissable unless there is a reason to exclude it under some specific rule of evidence or other federal law.

The Court of Appeals in *Taenzler* went on to give an opinion on the methodology used in determining future wage increases.

> Expert testimony on future wage increases is not as likely to confuse the issues. In the instant case, Dr. Sherman testified about anticipated changes in earnings levels and future levels of return on investment. The trial court limited the expert testimony to future trends in earnings of a particular group of employees and thus avoided distortions likely from testimony overly specific as to a particular future earnings figure or excessively general as to the overall national inflation rate. Such an approach restricted the expert testimony in a way that would assist the jury while at the same time avoid misapplication. The treatment of this evidence avoided peripheral matters and any waste of time. We cannot say that this treatment was manifestly erroneous. [citations omitted].[14]

The last part of this paper is to explain the methodology used in the *Taenzler* case to explain the relationship of present value and future wage increases from the view point of an economist.

## DISCOUNT FACTOR

The problem extant in this situation is that while plaintiff's attorneys can prove current wages and life expectancy to reach a figure of future earnings, defense attorneys will argue that any immediate award must be significantly reduced from that figure to reflect the fact that a current award can be advantageously invested so as to yield a windfall for the plaintiff. The defense will argue, therefore, that some discount factor is required to offset investment yields. Proper choice of a discount factor for the purpose of present value is difficult for a jury. From the standpoint of risk, United States Govenment securities are generally acknowledged to be the safest investment in terms of interest payments and repayment of principal. Treasury obligations have the full taxing and borrowing power of the United States Government as security. If a prudent investment is a government security, then the matur-

12. Grunenthal v. Long Island R.R. Co., 292 F.Supp. 813, 815-16 (S.D.N.Y. 1967).
13. *See, e.g.*, 608 F.2d at 799-800. *See also* C. McCORMICK, DAMAGES 300 (1935).
14. 608 F.2d at 801-02.

ity is the other risk factor to consider. Different types of government securities have different maturities and therefore different risks. There are three choices: treasury bills (short term), treasury notes (intermediate), and treasury bonds (long term).

Treasury bills are short-term obligations, mostly maturing either 13 or 26 weeks after issuance, but also including one-year issues and occasional issues scheduled to mature on federal tax payment dates, not more than one year away. Bills do not bear interest, but are sold at a discount and mature at face value. Treasury bills are considered to have the least risk because of their short maturities. They fluctuate very little because of their short maturity. The yields on treasury bills are considered in most financial and academic circles to be the risk-free interest rate at any given time. All other fixed income securities are priced according to risk, maturity and the prevailing markets.

Treasury notes are obligations whose term exceeds one year, but does not exceed 10 years. The coupon form is generally used and the minimum denomination is $5,000. In recent years the government has been doing much of their financing with treasury notes.

Treasury bonds consist of 24 issues, maturing between 1980 and 2007. These bonds were originally issued for terms from 10 to 40 years. Interest rates ranged from 3 to 8 1/2 percent, reflecting the different interest rates which the Treasury had to pay at various times. Long-term government bonds have four distinct risks over shorter-term bonds. (1) Interest rate risk. If interest rates increase, then the value of the bonds go down. A $1000 bond earning 4 percent interest due in 30 years, when interest rates are 8 1/2 percent, is worth $556. (2) Purchasing power risks. Inflation eats away at the buying power of the principal of fixed income securities. A $1,000 bond purchased in 1947 and maturing in 1978 would only have $131 of purchasing power in terms of current dollars. (3) Financial risk. What will be the integrity of the financial responsibility of the federal government in 30 years? There currently are huge trade deficits and spending deficits. So there are certainly more financial risks in a 30-year bond than a short-term obligation. (4) Call features. Many long-term obligations have call features. This means that the bonds can be called if interest drops and the government decides to reissue at lower rates.

Considering the above factors and risks, how would the prudent man invest a sum of money if he was interested in both the safety of principal and interest over time? Weighing all the risks and rewards, it would seem most prudent to invest in treasury

notes that have 3-5 year maturities. These securities will be used for purposes of comparison with inflation rates.

## WAGE INCREASES AND INFLATION

Inflation poses two different problems in a wrongful death case. First, what would have been the normal wage increases over the expected work-life of the individual over and above merit increase? Second, if there is an award given to the plaintiff, what happens to the purchasing power of the interest and principal over a period of time due to inflation?

The answer to the first question can be illustrated historically. The first decade of the post-war era experienced wage increases for production workers at an annual rate of 5.3 percent. During the next 10 years, there was wage increase moderation; the 10-year average declined to 3.5 percent, but increases were starting to rise in 1966 and 1967 due to the inflation pressures brought about by the Viet Nam War. The last 10 years has witnessed a steady growth in wage increases, climaxed by the 9.2 percent projected increase in 1978.[15] Wages have definitely increased over the past 32 years. It is reasonable to assume that wages will continue to increase. Therefore, had an individual in the wrongful-death case not been killed and remained employed, it is reasonable to assume that his wages would have increased.

If wage increases of production workers are not appropriate, then wage increases of the specific industry of the individual should be used. Wage information is readily available from a variety of government and industry publications.

The curse of the economic system in the United States during the past decade has been inflation. There have been devastating losses in purchasing power to consumers as well as holders of fixed income securities, and this includes government securities. If the return on a government bond is 7 percent and the consumer price index increases 7 percent, then the investor can only buy 93 percent of the goods and services that he could purchase the previous year. The interest will purchase less every year and the real value of the principal is reduced every year. The following example demonstrates how inflation destroys buying power.

If an investment of $100,000 was invested at 7 percent for 30 years and inflation increased at 7 percent per year, the following table illustrates the economic realities that would ensue.

15. All statistics presented here were compiled by the author from data obtained from various annual publications of the *Survey of Current Business* (U.S. Dept. of Commerce Bureau of Economic Analysis) dating back to 1947.

| | Interest Income | Cost of Goods & Services | Purchasing Power |
|---|---|---|---|
| Year 1 ..... | $ 7,000 | $ 7,000 | $ 7,000 |
| 2 ..... | 7,000 | 7,490 | 6,542 |
| 3 ..... | 7,000 | 8,104 | 6,114 |
| 4 ..... | 7,000 | 8,575 | 5,714 |
| 5 ..... | 7,000 | 9,175 | 5,340 |
| 10 ..... | 7,000 | 13,770 | 3,558 |
| 20 ..... | 7,000 | 27,087 | 1,809 |
| 30 ..... | 7,000 | 53,285 | 920 |
| 30 ..... | 100,000* | 761,214 | 13,136 |

*Principal

The bond holder receives $7,000 of interest in the 30th year, but that interest will only buy $920 worth of goods and services in the current dollars, if inflation increased at an annual rate of 7 percent. The $100,000 principal has purchasing power of only $13,136 after the same period of time. It is easy to see the effect that inflation has on bond holders and how inflation destroys the purchasing power of bond investors.

The post-war inflationary trend and its effect on the purchasing power of the dollar can also be demonstrated historically. The dollar had purchasing power of 77.3 cents in 1958, 64.2 cents in 1968 and only 33.8 cents in 1978. This means that a 1978 dollar could only purchase 33.8 cents worth of goods when compared to a 1947 dollar.[16] There is no question that we are living in inflationary times. The problem dominates our nightly news programs. How then can the courts not recognize the existence of the problem.

## RELATIONSHIP BETWEEN WAGE INCREASES AND PRESENT VALUE FACTORS

To establish potential loss of income of an individual in a wrongful death case, an economist must determine what a reasonable annual income would be during a person's work-life expectancy. The first measure is the historical earning pattern. Other factors include merit increases, promotions, education and ability. Once the annual salary has been established, the next question is, "What will the future income be?"

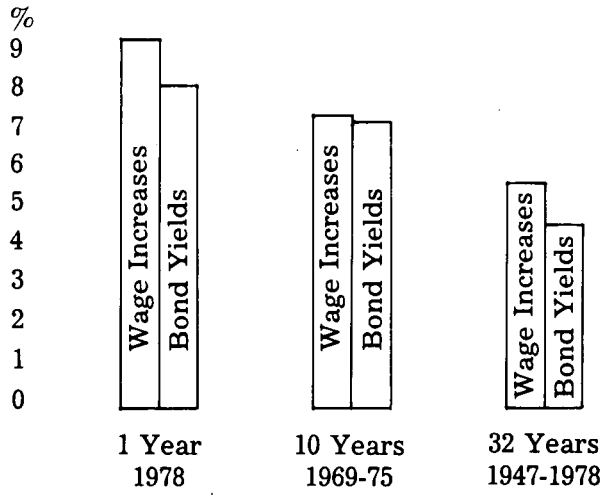
History also demonstrates that wage increases for production

16. See note 15 *supra*.

workers were substantially greater than the yields on treasury bonds from 1947 to 1958. Since 1958 there has been a very close relationship between the two variables. In fact, the coefficient of determination ($r^2$) was found to be .88 when a linear regression was run on the variables, beginning with the year 1958. This represents a high degree of correlation.

TABLE I

AVERAGE ANNUAL INCREASE IN HOURLY WAGES OF PRODUCTION VS. AVERAGE RETURN ON 3-5 YEAR TREASURY BONDS




The correlation between wage increases and the return on 3-5 year treasury notes can be illustrated in another way. Table I[17] shows the differences for a short term (1978), intermediate term (last 10 years) and long term (last 32 years). In every case wage increases have been greater than the return on treasury notes.

If the individual had continued to work, his wage increases would at least be the same as the return on treasury notes and, therefore, it would seem reasonable to nuetralize any present value discount factor (treasury note yields) by future wage increases. (This example applies to production workers. If the deceased was employed in another industry, the economist would simply have to research the historical data of other industries.)

17. See note 15 *supra*.

The off-setting of present value factors and wage increases can be illustrated in the following example.

| ANNUAL WAGE | | ANNUAL PERCENTAGE INCRESE—9% |
|---|---|---|
| $10,000 | × | 1.09 = $10,900 |
| NEW WAGE | | PRESENT VALUE FACTORS—9% |
| $10,900 | × | .91743 = $10,000 |

The conclusion, based upon the historical pattern of the past 32 years, is that future wage increases of the injured party should at least match the present value discount factor (interest rate). Therefore, future wages would be calculated, if one simultaneously ignores the offsetting factors of wage increases and discount factors, by an arithmetic calculation of the last annual wage of $10,000 per year, times the number of working years remaining.

As should be clear, this potential loss takes into account both future wage increases and the present value discount factors.

## RELATIONSHIP BETWEEN INFLATION AND PRESENT VALUE FACTORS

Another approach to the question of damages is the effect that inflation has on the future purchasing power of interest received and the real value of the principal over a period of time. Most consumers have felt the consequences of the high rate of inflation during the past five years. Bond holders have also been greatly damaged by inflation. If a bond holder received 7 percent interest, but the rate of inflation has increased 7.5 percent, the investor has had a negative return on his investment from the standpoint of purchasing power. This effect of inflation on purchasing power has already been demonstrated.

Many defense attorneys argue that in order to produce $10,000 of income each year only $142,857 would have to be invested at 7 percent. They will also point out that the $142,857 of principal will be left. What they fail to take into account, besides ignoring potential wage increases, is that inflation reduces the buying power of the $10,000 each year, and that the $142,857 principal would have lost 87 percent of its real value over 30 years if inflation is 7 percent.

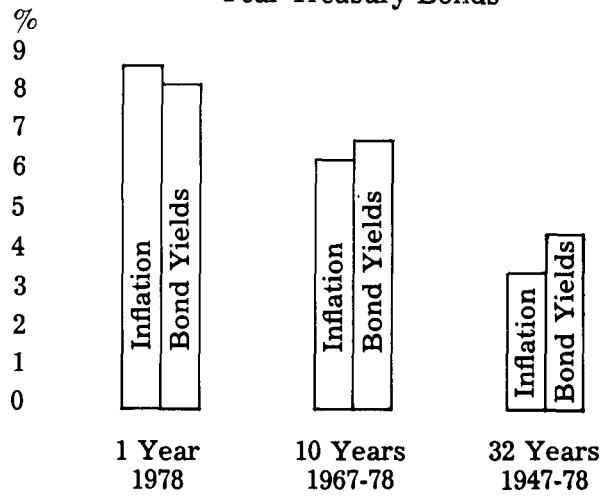
History demonstrates the relationship between treasury bond yields and the annual rates of inflation.[18] During the early fifties and the last part of the seventies, inflation was greater than the return on treasury bonds. From 1954 to 1974 the reverse was true.

18. See note 15 *supra*.

But more important is the relationship that exists between the two variables. Inflation of the past 20 years was the lowest during the early 1960's. As the inflationary pressures of the Viet Nam war mounted, interest rates started on their gradual increase. The relationship between the rate of return on treasury bonds and inflation rate is demonstrated in Table II.[19]

TABLE II

Average Annual Increase in Inflation vs. Average Return on 3-5 Year Treasury Bonds




The inflation rate of 1978 was 9 percent and the average rate of return on treasury bonds was 8.5 percent. (The yield at the end of the year was higher than the 8.5 percent). The rate of inflation has been about the same as the return on treasury bonds, during the last 10 years (6.7 percent vs. 7 percent). Yields on treasury bonds have stayed slightly ahead of the rate of inflation during the past 32 years (4.4 percent vs. 3.6 percent). This means that the real return on treasury bonds was 0.8 percent. Therefore, if a plaintiff receives a full recovery, absent any discount factor as offset by potential wage increases, a court can then leave the inflation problem to the plaintiff who can compensate for it by prudent investment.

19. See note 15 *supra*.

## CONCLUSION

Whether comparing the present value discount factor to either historical wage increases or the rate of inflation, it is justifiable to state that a relationship exists between interest rates and inflation or interest rates and wage increases. If these relationships exist, then instead of trying to project what that rate of inflation will be over the next 30 years, which the courts have repeatedly stated is very speculative, it seems more logical to offset the present value factor as represented by the interest rate of treasury bonds by either inflation or wage increases. Therefore, very simply, the economist should neither project future wage increases based upon inflation, nor should the potential earning stream be brought back to its present value by some interest factor when determining the potential loss of income in wrongful death cases.

The historical record presented in this paper demonstrates that wage increases have slightly greater treasury bond yields, and inflation has been slightly less than treasury bond yields. From an economic viewpoint, therefore, it makes the most sense when determining the present value of future earnings simply to use the figure that results from multiplying the current wage by the deceased's actuarial life expectancy. The opposing concerns of wage increases and discount factors approximately negate each other and the problem of wage increases or inflation can roughly be accounted for if the recovering plaintiff intelligently invests the recovery.