

The *Pfeifer* Decision, Risk and Damage Awards:

An Extended Response to Albrecht and Wood

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Abstract

This paper addresses arguments made in a paper by Gary R. Albrecht and John H. Wood, “Risk and Damage Awards vs. Long-Term Bonds” [*Journal of Legal Economics*, 7(1):48-58] that the *Jones & Laughlin Corp. v. Pfeifer* (1983) decision of the United State Supreme Court creates an entitlement that a damage award in a personal injury or wrongful death case should not be subject to “inflation risk.” On the basis of this presumed entitlement, Albrecht and Woods argue that discount rates used for future damage amounts should be based on short-term government securities, rather than long term securities. This comment suggests that: (1) Albrecht and Wood confuse the meaning of “inflation risk” with “inflation uncertainty;” (2) Nominal interest rates already fully discount inflation risk, but cannot fully eliminate loss due to unexpected inflation; (3) The new Treasury Inflation-Indexed Securities (TIIS) bonds provide a mechanism that is free of inflation uncertainty; (4) The *Jones & Laughlin Corp. v. Pfeifer* decision does *not* advocate a reward that is free of inflation uncertainty; and (5) Short-Term Bonds carry “price risk reduction” premiums that make them unsuitable for discount rates in damage awards even though the *Pfeifer* decision *does* permit such usage.

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Gary R. Albrecht and John H. Wood argue in “Risk and Damage Awards: Short-Term Bonds Vs. Long-Term Bonds” [this journal, 7(1):48-58] that the *Jones & Laughlin Corp. v. Pfeifer* (1983) decision of the United State Supreme Court creates an entitlement that a damage award should not be subject to “inflation risk.” On the basis of this presumed entitlement, they argue that discount rates should be based on short-term government securities, rather than long term securities. This comment suggests that: (1) Albrecht and Wood confuse the meaning of “inflation risk” with “inflation uncertainty;” (2) Nominal interest rates already fully discount inflation risk, but cannot fully eliminate loss due to unexpected inflation; (3) The new Treasury Inflation-Indexed Securities (TIIS) bonds provide a mechanism that is free of inflation uncertainty; (4) The *Jones & Laughlin Corp. v. Pfeifer* decision does *not* advocate a reward that is free of inflation uncertainty; and (5) Short-Term Bonds carry liquidity premiums that make them unsuitable for discount rates in damage awards even though the *Pfeifer* decision *does* permit such usage.¹

“Inflation Risk” vs “Inflation Uncertainty

Albrecht and Wood do not correctly understand the meaning of “inflation risk,” which they confuse with “inflation uncertainty.”² “Inflation Risk” is the known risk that inflation may occur in the future. At any given time, borrowers and lenders anticipate that inflation (or deflation) will occur in the future. What is known is a probability distribution of possible future rates of inflation (or deflation), with a central tendency that can be expressed as “the expected rate

of inflation.” The actual frequency distribution may vary by market participant, but the market as a whole develops an inflation premium that is incorporated in existing nominal interest rates. This is the meaning of the Fisher equation, and is a generally economic theory.³ Thus, nominal interest rates already fully compensate for the risk of inflation itself.

What is not included in the Fisher equation or in nominal interest rates is the premium for inflation uncertainty. “Risk” is the appropriate term for all known information about future possibilities. Uncertainty refers to what is not known that might affect what is known about future possibilities. This is Frank Knight’s distinction between “risk” and “uncertainty,” applied to interest rates on financial securities. At any given time, there is a known frequency distribution of possible future rates of inflation. That frequency distribution will be summarized into an expected rate of inflation and compensated by a “risk premium” that is equal to the expected rate of inflation plus some compensation for the variance in the rate. To illustrate this point, suppose that investors generally presumed that the expected rate of inflation over a particular period to maturity is 2 percent. Suppose further that the real rate of interest is 3 percent over that period. Finally, suppose that the investors rate the probabilities of outcomes as a 25 percent chance that there will be 1 percent inflation, a 50 percent chance that there will be 2 percent inflation, and a 25 percent chance that the rate of inflation will be 3 percent. With this simplified frequency distribution of expected outcomes, the expected rate of inflation is 2 percent. The nominal interest rate will include 3 percent for the real interest rate and 2 percent as a premium for the expected rate of inflation. It will also include a small premium for the risk caused by the known variance in the expected rate of inflation. This premium has some positive value. Assume that the premium for this variance is one fourth of a percent.⁴ Thus, the interest rate at this point should

be 5.25 percent.

But even this is not the whole story because there is also risk that the existing frequency distribution will turn out not to be the correct frequency distribution of risk. This is what is meant by “inflation uncertainty.” There is some risk that the known risks will be rendered inaccurate by unknown factors. The fact that they cannot be known in the present means that no specific premium will fully eliminate this risk. “Risk” refers to known variance. “Uncertainty” refers to unknown sources of possible variance. It is important that unknown factors can confer both benefits and costs, with almost equal probability. It is almost equally likely that new information will result in increasing a damage award as that it will reduce the value of that award. Still, uncertainty reduces the ability to plan effectively and is typically also compensated by a premium. Thus, we have one premium that is equal to the expected rate of inflation, another premium that compensates for the known variance in the expected rate of inflation, and still another premium that compensates for the unexpected variance in the expected rate of inflation. Nominal interest rates include all three types of premia. If another quarter of a percent is added, the interest rate is now 5.5 percent. But because no premium can preclude results that cannot be known, all of these premia taken together cannot preclude the remote possibility that the damage award fund may not *hypothetically* be able to make all scheduled payments.⁵

That is the kernel of truth at the core of the Albrecht and Wood argument. With a portfolio of Three Month Treasury Bills that were reinvested each three months, the inflation risk would be limited to losses during three month intervals. If sources of inflation uncertainty shifted the frequency distribution implicit in the expected rate of inflation, this would be captured after a period of no longer than the three months between reinvestment periods. Inflation losses could

not be more than one fourth of the annual rate of inflation during any one quarter. Nor, of course, could inflation gains be any greater than one fourth of the annual rate of inflation during any one quarter. However, if the worker chose to invest his award in any other type of portfolio, this presumed advantage of minimum risk from inflation uncertainty would disappear. It is generally a valid argument that what a worker does with an award after it is received is not an issue. But in this case, the only advantage of Three Month Treasury Bills is that they can be used to eliminate a special, and quite small, special risk of inflation uncertainty. If the worker chooses to invest in a portfolio of higher yield-higher risk assets, that advantage is given up. Thus, this argument directly depends on the actual use of Three Month Treasury Bills.

In summary, inflation risk is already compensated by a premium that exists in all nominal interest rates, both short-term and long-term. The risk implied by variance in the known frequency distribution of possible inflationary outcomes is also compensated by a premium that exists in all nominal interest rates, both short-term and long-term. And the market offers a premium for the uncertainty that the known variance will be correct. But the market cannot provide absolute certainty that a given fund invested in any portfolio of existing financial securities will turn out to be adequate to make all scheduled payments, defined in terms of real purchasing power. Only government can do that, and the federal government has taken steps in that direction. The instrument involved is TIIS bonds, which is the subject of the next section. Other than TIIS bonds, however, Three Month Treasury Bills, do reduce potential losses due to inflation uncertainty to the smallest possible level. But they only do that if the loss award is actually invested in Three Month Treasury Bills. If the award recipient invests a loss award in any other type of asset with longer terms to maturity, even the safest possible longer term bonds, this

supposed advantage of Three Month Treasury Bills is lost.

TIIS Bonds Compensate Inflation Uncertainty More Effectively Than T-Bills

It turns out that the correct premia for inflation uncertainty are extremely small and can be determined from the commercial marketplace in a quite easy manner. Beginning in January, 1996, the U.S. Treasury began issued what were then called TIPS (Treasury Inflation Protected Securities), but are now known as TIIS (Treasury Inflation Indexed Securities). Since these rates are designed to eliminate the impact of inflation uncertainty by being payable on a CPI adjusted basis, TIIS Securities can be compared with other U.S. Treasury Securities of similar maturities, adjusted for the current expected rate of inflation. For example, a ten year TIIS bond can be compared with a regular 10 Year U.S. Treasury bond. Since the TIIS security is defined in real CPI adjusted terms, the rate will be smaller than the 10 year Treasury bond that is not inflation indexed. In general, the rates should differ by the existing expected rate of inflation over the next ten years, so that amount should be subtracted from the rate offered on the non-indexed 10 year bond. The differences between the two types of 10 year Treasury bonds left at that point should be based on special tax complications with TIIS bonds and inflation uncertainty. The tax consequences have been estimated as requiring a market premium of perhaps a fourth of a percent for the rate on the TIIS bonds. After this adjustment is also made in the comparative rates, the remaining differences are very small (in the range of no more than a half of a percent and probably less than one fourth of a percent). Thus, it is fair to conclude that inflation-uncertainty premia are quite small, regardless of measurement difficulties created by special tax features of TIIS securities [Ireland, 1997].

TIIS bonds provide more complete protection against inflation uncertainty than do Three

Month Treasury Bills, which have some risk during the three month intervals between reinvestments. After the fact, any losses in purchasing power due to inflation are fully compensated by additions to the eventual principle value of the bonds. To be sure, TIPS bonds have undesirable tax features, but they are unlikely to be used by damage award recipients for reasons similar to why Three Month Treasury Bills are not likely to be used. However, in the hypothetical frame of reference one must use to even talk about eliminating inflation uncertainty as a factor, TIPS Bonds will do the same job Three Month Treasury Bills will do, only more completely because inflation losses during three month intervals will be eliminated.

The *Pfeifer* Decision Does Not Require Compensation for Inflation Uncertainty

Albrecht and Wood argue that the 1983 U. S. Supreme Court decision in *Jones & Laughlin v. Pfeifer* mandates elimination of the risk imposed by inflation uncertainty. This is simply not true. However, it is a decision that is often cited but little read by forensic economists. The purpose of the *Pfeifer* decision was to provide a general framework within which an economic damage analysis for a personal injury should be conducted. In most respects, economists who have been worried about the mandates of the *Daubert* decision can take a great deal of comfort from the fact that the United States Supreme Court spoke so cogently about the nature of damage estimates by economists. Note especially the commentary of the court about the predictability of inflation (at 2555):

First, by its very nature the calculation of an award for damages must be a rough approximation. Because the lost stream can never be predicted with complete confidence, any lump sum represents on a “rough and ready” effort to put the plaintiff in the position he would have been in had he not been injured. Second, sustained price inflation can make the award substantially less precise. Inflation’s current magnitude and unpredictability create a substantial risk that the damages award will have little relation to the lost wages it purports to replace. Third, the question of lost earnings can arise in many different

contexts. In some sectors of the economy, it is far easier to assemble evidence of an individual's most likely career path than in others.

While the impact of inflationary pressures in 1983 was much greater than it is today, it seems clear that the Supreme Court did not believe that inflation variance could be eliminated. Further, one cannot find any statement in the *Pfeifer* decision that requires that an a ward must provide certainty in the purchasing power of monies provided in a lost earnings stream. Abrecht and Wood cite Bryan and Linke (1988) as authority for their claim that *Pfeifer* implies that inflation "risk" should be minimized. Bryan and Linke were wrong as well. *Pfeifer* carefully avoided such a pronouncement, making it clear that either short-term or mixed-term portfolios could be used to develop discount rate estimates.

Pfeifer was very firm on only two issues. First, it explicitly reaffirmed *Norfolk & Western R. Co. V. Piepelt* (1980), which requires that taxes be removed from estimates of lost earnings of injured workers. Second, *Pfeifer* requires that the discount rate or rates that are used must be free of (default) risk. The claim made by Bryan and Linke that *Pfeifer* means that inflation risk should be minimized is based on a presumption that the Court included inflation "risk" when it made the following statement (at 2550):

Once it is assumed that the injured worker would definitely have worked for a specific term of years, he is entitled to a risk-free stream of future income to replace his lost wages; *therefore the discount rate should not reflect the market's premium for investors who are willing to accept some risk of default.* (Italics added for emphasis.)

The Court clearly does refer to a discount rate that is free of default-risk in this passage, which qualifies what is meant by a "risk-free stream of future income." Read in its entirety, there is no implication in this passage that the injured worker is entitled to certainty in purchasing power, but only that the discount rate should be free of risk of default. The need for a discount

rate that is free of default-risk is the point that Albrecht (1997) makes in his separate comment in this journal and is correct. The *Pfeifer* Court does not ignore inflation, but discusses the impact of inflation in the various methods for analyzing discount rates that it specifically allows, saying (at 2551) that:

Price inflation--or more precisely anticipated price inflation--certainly affects market rates of return. If a lender knows that his loan is to be repaid a year later with dollars that are less valuable than those he has advanced, he will charge a interest rate that is high enough both to compensate him for the temporary use of the loan proceeds and also to make up for their shrinkage in value [fn 23].

Footnote 23 elaborates the *Pfeifer* Court's analysis of inflation premia for the expected rate of inflation, the variance in the frequency distribution in that rate and inflation uncertainty, as follows (also at 2551):

The effect of price inflation on the discount rate may be less speculative than its effect on the lost stream of future income. The latter effect always requires a prediction of the future, for the existence of a contractual cost-of-living adjustment gives no guidance about how big that adjustment will be in some future year. However, whether the discount rate actually turns on predictions of the future depends on how it is assumed that the worker will invest his award.

On the other hand, it might be assumed that at the time of the award the worker will invest in a mixture of safe short-term, medium-term, and long-term bonds, with one scheduled to mature each year of his expected worklife. In that event, by purchasing bonds immediately after judgement, the worker can be ensured whatever stream of nominal income is predicted. Since all relevant effects of inflation on the market interest rate will have occurred at that time, future changes in the rate of price inflation will have no effect on the stream of income he receives...

On the other hand, it might be assumed that the worker will invest exclusively in safe short-term notes, reinvesting them at the new market rate whenever they mature. Future market rates would be quite important to such a worker. Predictions of what they will be would therefore also be relevant to the choice of an appropriate discount rate...

We perceive no intrinsic reason to prefer one assumption over the other...

In light of the foregoing passages, it seems clear that the Court was aware of the impact of

inflation, but did not intend to imply a requirement that “inflation-risk” must be minimized, as assumed by Bryan and Linke and cited by Albrecht and Wood. The Court fully understood the issues posed by inflation and intentionally avoided making any prescriptions with respect to how this issue should be treated. The *Pfeifer* Court *allows* the short-term bonds approach recommended by Albrecht and Wood, but carefully avoids recommending this approach over a mixed term approach. Thus, *Pfeifer* is not an authority for or against the approach recommended by Albrecht and Wood.

Liquidity Premia Make Short Term Bond Rates Unsuitable as Discount Rates

The final point of this comment is that the Short-Term Bond approach recommended by Albrecht and Wood, although permissible under *Pfeifer*, is very inaccurate for an entirely different reason. On the surface, it would appear that portfolios of TIIS bonds and Three Month U.S. Treasury Bills would both reduce the degree of inflation uncertainty to about the same degree, though with a slight superiority for the TIIS bonds. A portfolio that was turned over every three months could be reinvested at the higher or lower rates that would prevail at those very short maturity dates. This would prevent significant losses of purchasing power due to inflation. However, if this was all that was going on, one would expect the rates on Three Month Treasury Bills to reasonably match the rates on TIIS bonds, perhaps with small differentials (one fourth of a point or less) because of the special tax features of the TIIS bonds. Because of the unattractive tax features [Ireland, 1997], we would expect the rate on TIIS bonds to be slightly higher than the rate on Three Month Treasury Bills after reduction for expected inflation.

In fact, however, TIIS bonds have rates in the range of 3.5 percent in real terms, while the real rate of the return on Three Month U.S. Treasury Bills is typically more than a full percentage

point below that. The reason for this disparity is that the rate of return on Three Month U.S. Treasury Bills contains a significant negative liquidity premium. Three Month Treasury Bills are not used in long term portfolios at all, except as temporary stores of value. The rates are very low because the purchasing power will become available within three months without the kinds of risks that exist with pre-maturity market sales. They are only held in financial portfolios only when portfolio managers believe that current rates will change favorably in the future. And in those instances, fund managers are willing to accept lower than market rates of interest because of their liquidity advantages.

Although both TIIS bonds have even slightly less inflation uncertainty than Three Month Treasury Bills, they do not have the liquidity advantages of Three Month Treasury Bills. As with all other longer term securities, their prices are free to fluctuate more freely on the basis of long term changes in real interest rates. Thus, TIIS bonds must offer substantially higher rates of return than Three Month Treasury Bills. This poses no disadvantage for TIIS bonds in terms of replacing lost earnings. Since the future earnings of workers that are being replaced in damage awards would have had even worse liquidity characteristics than those in TIIS bonds, there is no reason to try to maximize liquidity in a damage award. The lack of liquidity for future returns on human capital investments are a profound feature of both labor markets and financial markets. In other words, the absence of price fluctuations for Three Month Treasury Bills is an important advantage of Three Month Treasury Bills over TIIS bonds. The higher returns on TIIS bonds are substantially related to the lack of these price advantages by TIIS Bonds. But because these advantages did not exist with the lost earnings that are being replaced, there is no basis in either legal requirements or in economic theory for arguing that the loss replacement fund should have

the liquidity advantages available in Three Month Treasury Bills.

Conclusion

On the basis of the *Pfeifer* decision, there is no requirement that a loss award should be invested in such a way that there is no risk from inflation uncertainty. The odds are relatively even that the loss award would be benefited or hurt by unexpected changes in the rate of inflation. This means that there is no requirement that even TIPS bonds should be used to eliminate the risks posed by unnecessary inflation. However, market evidence suggests that the costs of eliminating these risks by use of TIPS bonds are extremely small, certainly no more half of a percent in yield. As such, returns on TIPS bonds in the range of 3.5 percent would imply real rates of interest in the range of 2.75 to 3.25 percent. (A 2.75 percent rate is calculated by subtracting 0.25 percent for tax consequences and 0.5 percent for inflation uncertainty from the starting TIPS rate of 3.5 percent, whereas a 3.25 percent rate is calculated by subtracting 0.25 percent for both tax consequences and inflation uncertainty from the TIPS rate.) This is not what one finds with rates of interest on short-term government securities. While the courts may allow use of such rates, economic analysis indicates that this is very short sighted.

Endnotes

1. Gary Albrecht published a separate note in the same issue, "The Need to Use Risk Free Discount Rates: A Comment," [this journal, 7(1):92-95] arguing that discount rates should be free of default risk. This author generally agrees with Albrecht's arguments in that comment.

2. As used here, the terms "risk" and "uncertainty" have the meanings ascribed to them by Frank Knight in 1921 in *Risk, Uncertainty and Profit*.

3. The usual formulation of the Fisher equation is:

$$i = r + \pi + r\pi,$$

where i = the nominal rate of interest, r = the real rate of interest, and π = the expected rate of inflation. The cross multiplication factor $r\pi$ is usually treated as insignificant and dropped. In actuality, however, π is actually a composite inflation premium that compensates for the expected

rate of inflation, the variance in that expected rate and uncertainty in the rate of variance. In other words, π must be larger than a certainty equivalent for π to compensate for the known and unknown variance in the expected rate of inflation. This may be best explained with an example.

Suppose that in one circumstance the relevant increase in future prices is known to be 2 percent with certainty. In a second circumstance, it is known with certainty that there are three possible outcomes, A, B, and C, and that the probability of each outcome is 25 percent, 50 percent and 25 percent, respectively. If A occurs, the rate of increase in prices will be 1 percent. If B occurs, the rate will be 2 percent. And if C occurs, the rate will be 3 percent. In a third circumstance, A, B, and C are still the expected outcomes and the estimated probabilities are still 25 percent, 50 percent, and 25 percent, but unforeseen events in the future could change the probabilities of these outcomes. In all three circumstances, the expected rate of inflation is 2 percent, but one would expect that some premium for inflation variance would need to be added in the second instance, and some premium for the uncertainty in the inflation variance would have to be added in the third instance. This the lowest inflation premium would exist with inflation certainty at 2 percent, the next lowest would be the case with a certainty frequency probability distribution of 25 percent, 50 percent and 25 percent at inflation rates of 1 percent, 2 percent and 3 percent respectively. The highest inflation premium would occur when there was some uncertainty about the accuracy of the probability distribution.

4. This rate may be a function of the size of the expected rate inflation such that the risk premium would be larger in both absolute and relative terms at higher expected rates of inflation than at lower expected rates of inflation. Even if this is so, however, the existing market premium will account for this effect, which may be the reason why real rates of interest were so high during the high rates of inflation during the 1970's and early 1980's.

5. For this to be relevant, one must implicitly assume that the damage award recipient would invest the damage award in the manner implied by an economist's discount rate. Thus, if the discount rate is based on short-term securities, the entire damage award must be invested in short-term securities, which are continuously reinvested as short-term securities mature. The award recipient would extract scheduled payments equal in purchasing power to amounts projected by the economist and the fund would be said to be adequate if the damage award fund was sufficient to make all necessary payments to replace the lost purchasing power projected by the economist.

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