Discounting future earnings to present value – Debunking the myths

What present value is and the subjective factors that go into its calculation

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This is the fifth in a series of articles that explore issues surrounding the determination of damages from loss of future earning capacity in cases of partial disability.

There are three myths existing in the legal community pertaining to the present value of a loss of future earning capacity:

- Economists are capable of accurately forecasting a discount rate or interest rate.
- Economists are capable of accurately forecasting probable increases in future compensation.
- Discounting to present value *must* result in a sum of money that is less than the simple multiplication of an earning capacity dollar figure by a worklife expectancy.

In order to debunk these three myths, we need to define what present value is and describe the subjective factors that go into its calculation. Armed with this knowledge, attorneys will understand just how important this issue is, as tens of thousands of dollars or even hundreds of thousands of dollars may be at stake for their clients.

Present value defined

Put most simply, present value is a fancy term for "today's dollars." (Samuelson, Robert J. "Let Them Go Bankrupt, Soon." *Newsweek*. May 23, 2009.) More specifically, the present value of a loss of future earning capacity is the sum of money needed today that, if prudently invested, would replace the future stream of compensation for the plaintiff.

TABLE I

Period	CPI Inflation[1]	Wage Growth[2]	Compensation Growth[3]	91-Day T-Bills[4]
1949-2009	3.7	4.4	5.4	4.9
1959-2009	4.1	4.4	5.4	5.5
1969-2009	4.5	4.5	5.5	5.8
1979-2009	3.7	3.7	4.5	5.6
1989-2009	2.8	3.3	4.0	3.9
1999-2009	2.6	3.3	4.0	2.7
2004-2009	2.6	3.5	3.4	2.8

[1] U.S. Bureau of Labor Statistics. Consumer Price Index, All Urban Consumers (CPI-U), U.S. City Average.
[2] U.S. Bureau of Labor Statistics. National Employment, Hours, and Earnings: Average Hourly Earnings of Production Workers. Washington, DC.
[3] U.S. Bureau of Labor Statistics. Major Sector Productivity and Costs Inex: Hourly Compensation.
[4] Federal Reserve Bank. 3-Month and Ten Year Treasury Bill Rate (Secondary Market), Averages of Daily Closing Bid Prices.

For sake of illustration, imagine that in a wrongful death case a vocational expert has opined that the decedent had an earning capacity of $50,000 per year and a worklife expectancy of 20 years. Therefore, according to the vocational expert, the decedent has suffered a loss of earning capacity best represented by the sum of **$1 million.**

The jury's job in a case like this is to compensate the plaintiff for the present value of the future loss of earning capacity. However, a person who has an earning capacity of $50,000 per year today will receive pay raises over the years due to inflation and increased productivity. Further, the value of receiving $1 million in cash today is not the same as receiving $50,000 per year for the next 20 years. To account for the differences, economists apply a **growth factor** and a **discount factor** when performing a present value calculation. These percentage rates have countervailing effects on the present value sum; in the end, what is important is the difference between the two factors.

If the growth factor is less than the discount factor, the result is what economists call a **net positive discount,** and the present value of the $1 million recommended by the vocational expert will turn out to be **less than $1 million**. Not surprisingly, most economists hired by the defense will apply a net positive discount to arrive at present value; surprisingly, however, many economists hired by plaintiffs also use a net positive discount in making a present value calculation.

At times, it is possible that an economist could use a **net negative discount.** In such a scenario, the growth factor is

greater than the discount factor, and as a result the present value of the $1 million sum recommended by the vocational expert in our example will be **greater than $1 million**. Another possibility is that the growth factor and discount factor used by the expert are equal to one another and thus cancel each other out. This is known as a **net neutral discount** or a **pure offset;** in this scenario, the present value of a $1 million award is **exactly $1 million**.

In performing a present value calculation, the individual's earning capacity and worklife expectancy, along with the growth factor and the discount factor, are plugged into a mathematical formula. The formula is always the same, and yet different economists may arrive at wildly divergent opinions as to the present value of the sum. This is because economists may use different growth and discount factors, which are the subjective elements that go into a present value calculation.

Historical patterns of growth

Typically, economists rely on the historical performance of economic proxies to justify the growth and discount factors used in making present value calculations.

Table I (on previous page) defines historical patterns of growth and interest (or discount) over varying time periods. Column 1 defines the varying time periods examined. Column 2 is entitled "CPI/Inflation" and the numbers are specific to the rate of growth of the Consumer Price Index (CPI), which measures inflation. Inflation refers to the overall increase in costs associated with all goods and services in the economy.

You will note that there is a disparity among the CPI growth, wage growth (Column 3), and compensation growth (Column 4) rates. You may encounter economists who use any one of these measures when calculating present value of the loss of future earning capacity; however, we are of the opinion that **compensation growth** is the most appropriate figure to be used for the **growth factor**. Earning capacity is comprised of wages and fringe benefits; by using wage growth instead of compensation growth, the economist ignores the effect of the rise in fringe benefits (which in recent years have been rising at a rate faster than wages), and the resulting present value sum will unfairly shortchange the plaintiff.

Some may look at the consistently greater increase in compensation growth over wage growth and not see what all the fuss is about. However, the difference between these two metrics is a very big deal; using wage growth instead of compensation growth can significantly decrease the present value of the future earning capacity.

Further, using the CPI/Inflation rate is even more unfair to the plaintiff, as this figure is not specific enough to measure what needs to be measured for a present value calculation of loss of future earning capacity, and using it artificially decreases the present value of future lost earning capacity. The opinion of any defense economist who uses any measure other than the rate of increase of compensation as the growth factor in a present value calculation should be aggressively confronted at deposition and at trial.

The discount rate

Economists may also choose a variety of interest or discount rates when calculating present value. In 1983, the U.S. Supreme Court provided guidance in terms of an appropriate interest or discount rate to use (*Jones and Laughlin Steel Corporation v. Pfeifer* (1983) 462. U.S. 523). An appropriate investment vehicle was defined as one with the **highest rate of return** and the **least amount of risk**. The financial community defines this vehicle as a **91-Day Treasury Bill**, and in our opinion, data based on the return on investment (ROI) from this vehicle should be used as the **discount factor** when performing a present value calculation for loss of future earning capacity.

Column 5 of Table I is entitled "91-Day T-Bills." It provides the ROI for 91-day Treasury Bills over varying time periods. Because the federal government has never defaulted on a treasury bill, note, or bond, there is no risk of default. Further, the risks of inflation are short-term. At the end of the 91-day period, both the principal and interest are captured as promised. The 91-day Treasury Bill can then be reinvested for another 91 days, and the ROI on the new instrument may readjust to account for changes in the inflation rate. Historically, the 91-day Treasury Bill has provided a real return on investment. It is greater than inflation, but not by much. (Gamboa, Anthony M., Jr., Ph.D. MBA, and Nissum, Ronald, Ph.D. "Rules on Deposing the Defense Expert on Present Value." Unpublished manuscript.)

Some economists will use the rate of return on long-term U.S. government bonds as the discount rate, because such bonds, like the 91-Day Treasury Bills, do not have a risk of default. However, there are additional risks associated with long-term bonds. For example, there is a risk that the rate of inflation will rise, thus eating into the return on the bond. Also, there is a risk that interest rates will rise and the value of the long-term bond will fall as a result. If an emergency occurs requiring liquidation of the bond, some of the principal would be lost.

Moreover, long-term bonds carry the burden of taxes due even if the investment vehicle's return is not realized for many years into the future. This is referred to as the accretion rate, and it means that a tax liability must be paid on an annual basis even though the holder of the bond has not received the interest payment.

In return for assuming such risks, the investor in 10-year bonds receives a greater ROI than can be gained from a shorter-tem treasury. Similarly, a 30-year bond will typically provide an even greater return than a 10-year bond because the greater duration increases the inflation risk. Using the ROI for a long-term bond instead of 91-Day treasuries has the practical effect of reducing the present-value sum owed to the plaintiff. However, using any other metric except the ROI on a

91-day Treasury is inappropriate to use as the discount factor in a present value calculation because it places an undue burden of risk on the plaintiff.

While most economists confine the discount rate to treasuries or bonds, there are a few who suggest a rate equal to the average long-term return on equities. This is clearly inappropriate because of the volatility associated with the stock market. The objective in defining a present value future loss of earning capacity is to put the plaintiff in a position of being compensated for what he or she would have earned had the disability not occurred. It is simply not fair to subject the plaintiff to additional risks on top of the injury the plaintiff has already suffered.

The pure offset

In the sections above, we have described the historical data economists may use to justify the use of a net positive discount in calculating a present value sum. Because using the appropriate historical data for the growth and discount factors does not justify the use of a net positive discount, economists often resort to utilizing other, inappropriate measures to justify their opinion – all in the service of helping the defendant reduce the upfront damages award to the plaintiff. However, there is a fundamental problem with relying on *any* historical data to justify the use of any growth or discount factor: **there is no causal relationship between the past and future long-term rates of growth or discount.** The economy is simply too complex a system to allow for such accurate forecasting.

Thus, by utilizing a net positive discount in making a present value calculation, economists place an undue and unfair risk on the plaintiff so that the defense can reduce their upfront payout. Certainly, it is possible that there will be a spread of 1.5 percent or more between compensation growth and the ROI on a risk-free investment, but no one can predict with any degree of certainty if the spread would favor the plaintiff or the defendant. Further, by the time we know the answer – many years in the future – it will be too late to rectify any imbalance.

As an alternative, we advocate using a **pure offset** in calculating the present value sum. By allowing the growth and discount factors to cancel each other out, plaintiff and defense share equally in a future risk that is unknown and unknowable. We are not alone in our advocacy. In many state venues, the use of a pure offset is mandated by appellate and/or supreme court decisions. Kentucky and Pennsylvania are two examples. For many years, Alaska was a pure offset state until the legislature enacted a statute permitting economic testimony regarding other approaches to calculating present value. (Gamboa, Anthony M Jr., et al. "A Vocational Economic Rationale." Estimating Earning Capacity: A Journal of Debate and Discussion 2, no. 2 (2009): 97-123.)

Moreover, a careful inspection of Table I reveals that from 1989 through 2009 compensation growth is 4 percent and the return on a 91-Day Treasury Bill for the same period is 3.9 percent, almost a perfect wash. The same is true for the longer-term period of 1959 through 2009, where compensation growth is 5.4 percent and the return on a 91-Day Treasury Bill is 5.5 percent. However, it should not be concluded that data from the last twenty years or even the last fifty years justifies the use of a pure offset because we do not know what will occur in the next twenty-year period or 50-year period.

Conclusion

To demonstrate how much is at stake in the debate over present value, let us return to our potential $1 million award. Using the pure offset method, the award would be $1 million. Using a 1.5 percent net positive discount, a figure that economists hired by defense attorneys and even some economists hired by plaintiff's attorneys would consider reasonable, the present value of the sum would be approximately $858,432.

Of course a defense attorney is going to hire an economist who utilizes a net positive discount in performing a present value calculation and introduce evidence to a jury as to the reasonableness of using such figures. However, given the stakes, we have to wonder why a plaintiff's attorney would hire an economist who would utilize anything other than a pure offset or a net negative discount in performing a present value calculation on a loss of future earning capacity.

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