

PREJUDGMENT INTEREST AND THE FALLACY OF THE INVALID ROUND TRIP

by Aaron Dolgoff & Tiago Duarte-Silva

I. INTRODUCTION

Certain commentators argue that prejudgment interest should be set as the claimant's opportunity cost of capital. Abdala, López Zadicoff, and Spiller argue that prejudgment interest should be "linked to the cost of capital of the affected business."¹ Their argument rests on what they term an invalid round trip: "An invalid round trip occurs whenever the [prejudgment interest] is set at a rate that differs substantially from the rate at which expected future losses are discounted to the valuation date."² In this Note, we show that the invalid round trip argument for using the claimant's opportunity cost of capital to determine prejudgment interest lacks a basis in economic principles because it ignores the effect of uncertainty inherent in profit projections.

II. THE INVALID ROUND TRIP ARGUMENT – AN EXAMPLE

To illustrate the Invalid Round Trip ("IRT") argument, we start with a simplified example. Suppose year zero is the date of harm. The claimant alleges it was denied an expected profit of \$100 in year 10. It is determined that, to value that expected profit, it should be discounted at the claimant's cost of capital as of year zero, which is 10 percent. The year zero value of the expected lost profit is the expected \$100 discounted at 10 percent, *i.e.*, $\$100/(1+10\%)^{10}$ or \$38.55. Thus, a damages award determined at the date of harm in year zero would be \$38.55. Suppose further that damages are awarded at year five with prejudgment interest assessed at five percent. As a result, the award would be $\$38.55 * (1+5\%)^5$ or \$49.21.

¹ Manuel A. Abdala, Pablo D. López Zadicoff & Pablo T. Spiller, *Invalid Round Trips in Setting Pre-Judgment Interest in International Arbitration*, 5(1) WORLD ARB. & MEDIATION REV. 1 (2011).

² *Id.* at 4.

The above calculations discount the expected profit in year 10 from year 10 to year zero and then move it forward to year five. However, what if the \$100 expected profit had been discounted from year 10 directly to the award date in year five? In that case, the year five amount would be $\$100/(1+10\%)^5$ or \$62.09. The process that resulted in an award of \$49.21 is supposedly an invalid round trip because it results in a different answer than what would result if the expected profit was discounted directly to the award date. The IRT argument implies that the claimant is undercompensated if the rate of prejudgment interest is lower than the discounting rate, and overcompensated if it is higher.

III. THE CLAIMANT'S OPPORTUNITY COST OF CAPITAL REFLECTS THE RISK OF EXPECTED PROFITS

Thus far, we have simply assumed that there is a profit expected for year 10. But where does this expectation come from? It is a forecast formed in year zero using the information available at that time.³ This information set includes the nature of the claimant's business, industry and market conditions, projections for future revenues and costs, and any assumptions needed to form those projections.

Some projections are more certain than others. At one extreme of low risk (no uncertainty) are projections like future interest and principal payments from a US Treasury bond. At the other extreme are projections like the results of a coin flip. Business profit projections lie somewhere in between, reflecting both factors that may be estimated with more certainty (*e.g.*, the cost of fixed worker salaries) and factors that may be estimated with less certainty (*e.g.*, how many customers will buy a product).

The opportunity cost of capital used to discount expected profits reflects the risk of those expected profits. The greater the risk, the greater the discount rate and the opportunity cost of capital.⁴ For example, the discount rate for the expected interest

³ Under a willing buyer/willing seller valuation standard, the relevant information set would be that which was available to such buyers and sellers.

⁴ For the sake of simplicity, we are putting aside the specific nature of the risks, for example, whether they are diversifiable or not. The opportunity cost of capital is frequently assessed using models that measure systematic or undiversifiable risk. The uncertainty in the cash flow (*e.g.*, from \$50 to \$150 in

and principal payments from a US Treasury security will be lower than the discount rate for a business's expected profits.

IV. THE ROUND TRIP FALLACY

Understanding that discount rates are rooted in risk allows one to see the fallacy behind the invalid round trip argument. Simply stated, the invalid round trip argument wrongly compares amounts of differing risks.

Discounting future profits to the date of harm converts a risky projection into a present value from the perspective of an investor evaluating the profit projections at year zero. If the present value represents a fair market value, in year zero an investor could have sold the rights to those projected profits in exchange for cash, *i.e.*, could have converted an expectation of risky profits into a risk-free asset.⁵ From our example, \$38.55 in year zero is the cash-equivalent value of the \$100 in year 10. The cash-equivalent value as of year five is the cash-equivalent value as of year zero plus prejudgment interest.⁶

In contrast, the value of the \$100 discounted directly to year five (\$62.09), which is advocated by the IRT argument, is not the cash-equivalent amount at which an investor would value the \$100 claim in year five, the date of the award. \$62.09 is the *expected* value, by year five, of year 10 profits *from the perspective of someone at year zero*. However, this expected value is still an uncertain forecast. By the time year five arrives, the forecast for year 10, or the discount rate associated with that forecast, may have changed. Suppose, for example, that by year five one learns that economic growth is higher than previously expected. If so,

potential outcomes) may relate to some risk that is systematic across all investments and therefore is undiversifiable.

⁵ We assume the cash will be invested in risk-free investments such as US Treasury notes that would allow the investor to breakeven with expected inflation.

⁶ We do not address here alternative economic arguments for how prejudgment interest should be determined. We argue elsewhere that a risk-free interest rate is appropriate, though the literature on prejudgment interest rates may provide alternative perspectives. See Aaron Dolgoff & Tiago Duarte-Silva, *Prejudgment Interest: An Economic Review of Alternative Approaches*, 33 J. INT'L ARB. 99 (2016).

the year 10 forecast might be revised from \$100 to \$150, and therefore the value advocated by the IRT argument would become $\$150/(1+10\%)^5$ or \$93.14, instead of \$63.09. Or suppose instead that market interest rates increase from 10% to 15% between years zero and five. In this case, the value advocated by the IRT argument would become $\$100/(1+15\%)^5$, or \$49.72, instead of \$62.09.

In summary, \$62.09 is itself an *uncertain* projection of a future value because when year five actually arrives, the value could be considerably higher or lower. It follows that such a projection amount is not comparable to a cash amount, but rather must be converted to a present-value equivalent in order to conform to a fair market value standard. The uncertain or projection-like nature, not the cash-equivalence, of the \$62.09 makes it unsuitable for determining an award to be paid in cash.

V. AN ASSET'S EXPECTED VALUE AT THE AWARD DATE IS NOT ITS ACTUAL VALUE ON THAT DATE

The roundtrip fallacy may also be understood as a false equivalence between actual and expected returns. Recall from our example that the claimant's opportunity cost of capital is 10 percent. That represents the expected rate of return on the asset's value from year zero forward. The opportunity cost of capital is the required return needed to compensate investors for risk. It is determined at the time of investment.

Suppose an investor purchased the asset in year zero for its fair market value of \$38.55. By year 10, if the profit turns out to be \$51.81 instead of \$100, the investor realized only a return of three percent, or $(\$51.81/\$38.55)^{1/10}-1$. Thus, the *actual* rate of return was much lower than 10%.

That is the nature of risky investments; sometimes they work out well, and sometimes they do not. Investors require compensation for risk, but actually delivering that compensation cannot be guaranteed. In other words, the *expected* value of the asset at the award date is not the *actual* value of that asset on that date.

It follows, then, that it is wrong to assume that no matter how risky the investment is, its value would always grow at the expected rate of return. However, if prejudgment interest were to

be awarded at the claimant's opportunity cost of capital, the value of the damage award would effectively grow over time at the claimant's opportunity cost of capital: 10 percent. Such an approach assumes a claimant is entitled to recover the *expected* rate of return on its risky investment, regardless of whether such a rate of return would actually have been realized.

In fact, the IRT argument actually implies that the riskier the underlying asset is, the faster an award grows over time. In other words, very uncertain projects are worth much more in the future than more certain projects. This approach implies that the claimant benefits more from the passage of time if the asset at stake is riskier and therefore has a higher expected return as of the date of harm.

Note also that the IRT argument implies that a claimant is entitled to recover the *expected* rate of return on its risky investment, regardless of the fact that the asset was denied to the claimant as of year zero. In other words, an award of an expected value of the asset using information available as of a prior date credits the claimant simply for having hypothetically held a risky asset and not for any actual determination of whether such expectations would have been met.

Even if arbitrators determine it appropriate to award the value of an asset as of the award date, such a determination would not warrant using the claimant's opportunity cost of capital as the basis for prejudgment interest. Rather, it would require conducting a valuation of the asset as of that date using information available at the time (rather than a valuation using only information available at the date of harm).

VI. CONCLUSION

We argue that the IRT argument for prejudgment interest based on the claimant's opportunity cost of capital is flawed. It makes inappropriate comparisons between risky expected future profits and cash-equivalent or risk-free present value amounts. Abdala, López Zadicoff, and Spiller's argument effectively credits claimants with a right to earn an expected rate of return on a risky projected future profit stream, no matter how risky and how far removed those projections are from how the profit stream would have actually turned out. The appropriate rate of prejudgment interest needs a sounder basis in economic principles.



TIAGO DUARTE-SILVA, PHD, is a Principal at Charles River Associates and an adjunct professor at Boston College's Carroll School of Management. He has extensive experience in damages in commercial and shareholder disputes. His case experience spans various industries, including financial services, energy and natural resources, consumer products, technology, pharmaceuticals, chemicals, telecommunications, insurance, casinos, outsourcing, education, and distribution. Dr. Duarte-Silva's industry experience includes several years as a sell-side equity research analyst covering European and Latin American companies for institutional investors. He is a native Portuguese speaker, conversant in Spanish, and has a reading knowledge of French. Dr. Duarte-Silva can be reached at tduarte@crai.com.



AARON DOLGOFF, CFA, is a Vice President at Charles River Associates. He specializes in damages, corporate finance, compensation, securities valuation, and financial markets analysis. He manages projects that concern securities and business valuation, securities litigation damages, bankruptcy, and general business damages. His experience includes various large scale international arbitration projects. He has worked on behalf of clients in natural resources, telecommunications, pharmaceuticals, manufacturing, and other sectors. Mr. Dolgoff can be reached at adolgoff@crai.com.