Analysis&Perspective

CIVIL PENALTIES

According to various environmental laws, the ''economic benefit'' obtained through noncompliance is one of several factors a federal judge or EPA shall consider when establishing civil penalties. EPA's method for calculating economic benefit is incorporated in the agency's ''BEN'' model. The authors of this article argue that the BEN methodology, particularly its use of the corporate ''weighted average cost of capital,'' is without support in the mainstream literature on corporate finance and has been undermined by several court decisions in the last five years, including a very significant decision by the U.S. Court of Appeals for the Third Circuit in *U.S. v. Allegheny Ludlum Corporation*. The recent settlement in that case can best be understood in the context of that decision.

Explanation of Recent Settlement in *U.S. v. Allegheny Ludlum*

BY ROBERT H. FUHRMAN AND JOHN DOWNIE

Earlier this year, for $2.375 million, the Environmental Protection Agency and Allegheny Ludlum Corporation (ALC)[1] settled an environmental civil penalty case[2] that had been ongoing for close to ten years. That amount is only 29 percent of the $8.24 million penalty imposed on ALC in the same case in February 2002 by the U.S. District Court for the Western District of Pennsylvania.

[1] Allegheny Ludlum Corporation (ALC) is a western Pennsylvania specialty steel manufacturer. In 1996, ALC combined with Teledyne Inc. to become Allegheny Teledyne Incorporated. In 1999, the name of the firm changed to Allegheny Technologies Incorporated. Throughout this article, the words ''ALC'' and ''the company'' are used interchangeably with Allegheny Ludlum Corporation, Teledyne Incorporated, and Allegheny Technologies, Incorporated, depending on which entity existed at each point in time.

[2] *U.S. v. Allegheny Ludlum Corp.*, 187 F. Supp. 2d 426 (W.D.Pa); 366 F.3d 164, 58 ERC 1225 (3rd Cir. 2004).

Robert H. Fuhrman, managing director of Seneca Economics and Environment, LLC, an economic consulting firm in Germantown, Md., has worked on over 150 environmental civil penalty cases. John Downie, an independent consultant, worked with Mr. Fuhrman on his economic benefit reports in this and several other cases.

This article reflects the views of the authors and not necessarily those of BNA, which welcomes alternative points of view.

According to the relevant EPA press release:

> The settlement announced today was reached during court-ordered mediation. The settlement reflects that Allegheny Ludlum generally has complied with its permits for several years, thereby reducing adverse impact to the environment.[3]

We believe that the statement above is not a very accurate explanation of why EPA allowed this case to settle at such a large discount relative to the district court-imposed penalty.

This article is intended is to place the settlement in a broader context. In this regard, it is critical to understand that the district court judgment reflected a doubling of the amount of economic benefit that the court believed that ALC had obtained due to noncompliance with Clean Water Act requirements. Furthermore, the United States Court of Appeals for the Third Circuit found that the underlying financial methodology applied by the district court ''may so vastly overstate the economic benefit to ALC of its improper discharges, that it does not 'level the playing field,' and that it constitutes an *abuse of discretion*.''[4] The government's methodology was based on use of ''weighted average cost of capital''[5] (WACC) to adjust past and future cash flows to the present.

[3] EPA press release Feb. 1, 2005, is available at http://www.epa.gov/region3/news.htm on the World Wide Web.

[4] 366 F.3d at 169. Emphasis added.

[5] WACC is based on the firm's mix of debt and equity financing. The after-tax cost of debt is multiplied by the percentage of debt in the firm's capital structure. The equity cost of capital is calculated using the Capital Asset Pricing Model and multiplied by the percentage of equity in the firm's capital structure. Then the two resulting values are added together to derive WACC. See Brealey and Myers, *Principles of Corporate*

The District Court Decision

Some general background about this case may be helpful to the reader.

In June 1995, the United States instituted a civil action against ALC seeking penalties for Clean Water Act violations involving unlawful discharges of oil and other pollutants, including chromium, copper, zinc and nickel. By translating individual violations of monthly effluent limits into violations equivalent in number to the number of days in each relevant month, the United States transformed the original 63 claims into 1,169 alleged violations of effluent limitations. Through amended complaints, the United States asserted thousands of additional violations involving alleged interference by ALC with a local publicly-owned treatment works (1997) and alleged reporting failures (1998).

A 2001 jury trial on liability cleared ALC of all but 6 of 4,999 alleged violations that were to be decided by a jury. During that trial, which immediately preceded a nonjury penalty trial, the district court did not allow ALC to introduce evidence that its alleged zinc-related violations actually resulted from laboratory errors.

The district court handed down its decision a year later, penalizing ALC for 1,122 days of Clean Water Act violations at its Brackenridge, Natrona, West Leechburg, Bagdad, and Vandergrift steel-making plants during the period from July 1990 to February 1997.[6] Violations of monthly average effluent limitations were treated as one day of violation for each and every day of the relevant monitored month.

Having accepted analyses set forth through the proffers and testimony of Gary Amendola, the United States' expert on steel manufacturing, and Robert L. Harris, the government's economic expert witness, the district court went on to consider how to determine the economic benefit ALC had obtained from noncompliance. In this context, the district court wrote:

> A key point that the Third Circuit has firmly recognized in examining economic benefit analysis is that ''a violator's economic benefit under the Clean Water Act may not be capable of ready determination.'' *Dean Dairy*, 150 F. 3d at 263-64 (quoting *Smithfield*, 972 F. Supp. at 348). The court of appeals' review in *Dean Dairy* of its opinion in *Powell Duffryn*, legislative history, Supreme Court precedent, and decisions of other courts, establishes that a plaintiff may make a reasonable approximation of economic benefit to the violator, without elaborate or comprehensive proof, to successfully meet its burden. A court may exercise its discretion under the Act in accepting proof that is imprecise and approximate at best.[7,8,9,10]

In this case, citing the approach endorsed by the District Court for the Eastern District of Virginia in 1997 in *United States v. Smithfield Foods, Inc.*,[11] the District Court for the Western District of Pennsylvania adopted the approach sponsored by Mr. Harris, who also served as the plaintiff's economic expert in *Smithfield Foods, Inc.*[12] Mr. Harris' approach, like that of the EPA BEN model, used WACC, averaged over the years of noncompliance, as the single interest rate both for discounting[13] all future cash flows back to the date of noncompliance to determine their economic value as of that date and for adjusting past non-compliance-related savings to determine their present value as of the date of trial.[14] (For a discussion of the mechanics of this approach, see footnote 14.)

The district court quoted Mr. Harris as explaining in his proffer that WACC ''represents the rate of return a company must earn annually to continue to attract its investors and maintain its current levels of operations. It is a rate which is commonly used by companies in making capital budgeting decisions.''[15]

Finance, sixth edition, pages 195-203 and 547. WACC is based on an *expected* rather an *actual* rate of return.

[6] All but 6 of these alleged violations were ones that either (1) ALC had admitted prior to the jury trial, or (2) the district court had found ALC liable for prior to the jury trial.

[7] 187 F. Supp. 2d 426.

[8] The case referred to as *Dean Dairy* is actually *United States v. Municipal Authority of Union Township*, 150 F. 3d 259 (3d Cir. 1998) 46 ERC 1977.

[9] In order to calculate economic benefit, one must identify the year-by-year cash flows that the defendant saved through noncompliance; adjust these cash flows for taxation; and employ a financial methodology to determine their present value. We are unaware of any court that has concluded that, although the relevant cash flows were misidentified, the resulting economic benefit figure was still a ''reasonable approximation of economic benefit.''

[10] Federal district courts have reached dramatically different conclusions about what constitutes a ''reasonable approximation of economic benefit,'' upholding at various times different types of interest rates for compounding past economic savings to determine their present value. For example, in *Friends of the Earth v. Laidlaw Environmental Services* ,890 F. Supp. 470, 40 ERC 2073 (D.S.C. 1995), the district court upheld for this purpose the use of the equity cost of capital, a very high expected rate of return associated with ownership of common stock. A corporation's WACC, a lower expected rate of return, was upheld in *U.S. v. Roll Coater, Inc.*, (S.D. Indiana, 1991) (Cause No. IP 89-828 C) and in *U.S. v. Smithfield Foods, Inc.*, 972 F. Supp. 338, 45 ERC 1387 (E.D. Va. 1997). In *U.S. v. WCI Steel, Inc.* 49 ERC 1685, 72 F. Supp. 2d 810 (N.D. Ohio 1999), and *U.S. v. The New Portland Meadows, LLC* (D.Oregon, 2003), Civil No. 00-507-KI, the relevant district courts relied on the after-tax risk-free rate of interest associated with short-term U.S. Treasury bills, a much lower rate than WACC, as the appropriate interest forward rate to use in the economic benefit analyses.

[11] 972 F. Supp. at 349.

[12] In *Smithfield Foods*, the defendant's economic expert witnesses were Robert H. Fuhrman and Dr. A. Lawrence Kolbe.

[13] ''Discounting'' is a technique used in financial analysis to adjust a stream of monetary payments or costs for risk and the time value of money. The concept underlying this adjustment is that a dollar received today is worth more than a dollar received one year from now. Similarly, the further the payment is in the future, the less it is worth today. Although a table of discount factors may be found in many textbooks on corporate finance, selection of the appropriate discount rate to use in a given analysis is often not straight forward and requires appropriate training and expertise.

[14] In both BEN and Mr. Harris' approach, the modeling considers two separate streams of cash flows: (1) those that would have resulted from ''on time'' compliance and (2) those resulting from ''delayed'' compliance, if any. To put those cash flows on a common temporal basis, both in BEN and Mr. Harris' methodology, each set of cash flows is discounted back to the date of noncompliance at the WACC rate, taking into account the relevant lapse of time between the dates of the cash flow and when noncompliance began. The difference between the present values of the ''on-time'' and ''delayed'' case cash flows as of the date of noncompliance is said to be the ''economic benefit'' as of that date. The calculated economic benefit is then compounded forward at the WACC rate to the date of the trial or the assumed date of penalty payment.

[15] 187 F. Supp. 2d 426.

DEN ISSN 1060-2976

The court noted that Dr. Howard Pifer,[16] economic witness for ALC, also used WACC to discount cash flows back to the date of noncompliance. However, unlike Mr. Harris, Dr. Pifer believed that it was appropriate, once the economic benefit was calculated as of the date of noncompliance, to adjust it forward in time based on short-term Treasury bill rates, rather than on the basis of WACC.

According to the district court:

> We reject Dr. Pifer's reasoning as unpersuasive because it fails to take into account the economic reality that ALC had the use of the money for as much as ten years, and there is no evidence that it invested the money in 30 day treasury bills. The key concept ignored by Dr. Pifer is that money is fungible and that once ALC had an economic benefit as of, for example, 1990, we cannot know what happened to those particular dollars. As Harris points out, the funds might have been used for very profitable investments or for less profitable investments. But WACC offers a reasonable approach for averaging what ALC did with the money.[17]

Furthermore:

> . . . were we to adopt ALC's approach we might very well create an economic incentive to violate the law: a company could profit from the spread between its investments, which inevitably are designed to exceed the 30-day treasury rate, and the 30-day treasury rate.[18]

The district court concluded that ALC could afford to pay at least twice the amount of economic benefit calculated by Mr. Harris and accepted by the court. The district court therefore doubled Mr. Harris' economic benefit figure and imposed on ALC a civil penalty of $8.24 million.

The Third Circuit Ruling

ALC appealed the district court decision to the U.S. Court of Appeals for the Third Circuit. On April 28, 2004, the Third Circuit handed down a multifaceted opinion that addressed three separate issues that are discussed below: (1) the viability of the so-called "laboratory error defense"; (2) the question of whether a violation of a monthly average should be treated as violations for each and every day of the relevant month; and (3) the Third Circuit's view of the economic benefit methodology accepted by the lower court.[19]

The Lab Error Defense. In the early to mid-1990s, based on results generated by ALC's in-house laboratory, the company reported to the Pennsylvania Department of Environmental Protection certain exceedances of effluent limitations for zinc. During this time period, ALC undertook various projects to identify and correct possible zinc-related problems, but without apparent success.

Split sampling involving use of both in-house and outside laboratory testing was performed in 1996, which enabled ALC to pinpoint what it perceived to be the source of the problem: a contaminated reagent used in the in-house lab had caused systematic overreporting of zinc in its effluent.

Following cross-motions for summary judgment on the zinc issue in the year 2000, and without reaching the facts related to ALC's defense, the district court concluded that the lab error defense was not "a defense to liability accepted in this circuit," and granted summary judgment on this issue for the United States.[20] As a result of the district court's approach to the multiplier for violations of monthly limitations, the approximately one dozen Discharge Monitoring Reports that raised the zinc issue were treated as 340 daily violations, thus corresponding to approximately 30 percent of the total 1,122 days of violations for which the district court ultimately found ALC liable.

In regard to the "lab error defense," EPA's main contention was that Congress required self-reporting to be accurate, so courts should treat Discharge Monitoring Reports, which must be certified as correct by the discharger, as admissions that are sufficient to establish liability. In EPA's view, allowing companies to impeach their own Discharge Monitoring Reports would reward them for inaccurate monitoring practices and further complicate enforcement litigation.

The Third Circuit disagreed, stating "while the [Clean Water Act] unambiguously imposes strict liability for unlawful *discharges*, it is by no means obvious that a similar strict liability regime has been imposed on faulty reporting."[21] It continued, "[W]e hold that the presence of certified [Discharge Monitoring Reports] does not preclude the laboratory error defense in cases of overreporting."[22] Furthermore:

> Since the district court did not consider the sufficiency of laboratory error defense argument in the proper light, it, not this court, should consider the defense in the first instance. We will therefore vacate and remand so that the laboratory error defense can be considered and adjudicated with respect to the claims it affected.[23]

Monthly Average Violations. According to ALC's brief to the Third Circuit, in adopting the United States' draft penalty opinion, the district court put great emphasis on the "history of violations" factor of § 1319(d) of the Clean Water Act, the provision that sets forth the criteria that a judge or the EPA Administrator "shall consider" when establishing civil penalties. "Numerosity seems to have been the major reason for increasing [i.e., doubling the economic benefit to derive] the penalty."[24]

ALC took particular issue with the district court's decision to accept the "Plaintiff's Motion In Limine on Counting Days of Violation," which converted all violations of the monthly parameters in the defendant's National Pollutant Discharge Elimination System (NPDES) permit into violations equivalent in number to the number of days in the monitored month.

The Third Circuit agreed with ALC. That court found "problematic" the United States' position that the maxi-

---

[16] Dr. Pifer taught corporate finance and managerial economics at Harvard Business School in the early 1970s, and was a founder and chairman of the board of Putnam, Hayes and Bartlett, Inc., an economic and management consulting firm, from the mid-1970s through the late 1990s. He is currently affiliated with Charles River Associates, Inc.

[17] 187 F. Supp. 2d 426.

[18] 187 F. Supp. 2d 426.

[19] The Third Circuit also reviewed the district court's determination of delayed and avoided compliance costs and the period of noncompliance. The appeals court upheld the district court's findings in these regards, stating that they were not clearly erroneous and must be left to stand.

[20] Page 21 of the Appellant's Brief dated May 9, 2003.

[21] 366 F.3d., at 175.

[22] 366 F.3d. at 176.

[23] Ibid.

[24] Appellant's Brief, page 51.

mum penalty for all monthly average violations, regardless of the evidence, ''should be thirty times the maximum penalty for the worst [daily] violation imaginable.''[25] Accordingly, the Third Circuit expressly vacated the judgment of liability for all claims against ALC affected by monthly average violations.[26]

Even more importantly, and of grave concern to EPA, was the Third Circuit's conclusion that there should be no presumption that violation of a monthly average automatically translates into thirty or thirty-one days of violations, each subject to a statutory maximum fine of $25,000 per day.[27]

Economic Benefit. The Third Circuit strongly disagreed with the financial methodology that had been accepted by the district court for calculating the economic benefit of noncompliance in this case. As part of that methodology, Mr. Harris calculated ALC's WACC for each year from 1990 to 1998, with the rates ranging from 15.83 percent in 1990 and 1991 to significantly lower rates in subsequent years. These rates averaged 12.73 percent per year, a figure which he applied as a discount/interest forward rate to all relevant cash flows regardless of when they occurred or should have been incurred.[28]

The Third Circuit concluded that Mr. Harris' application and the district court's acceptance ''of the 12.73 % rate may so vastly overstate the economic benefit to ALC of its improper discharges, that it does not 'level the playing field,' and that it constitutes an abuse of discretion.''[29] In this regard, the Third Circuit noted that during the trial ALC had presented evidence that the actual return on capital for ALC and its parent company between the date of alleged noncompliance and the trial date was 5.7 percent, less than half of the company's expected rate of return as measured by its WACC.[30] It stated:

> As a prelude to making this determination we explore the potential ramifications of the notion of economic benefit under § 1319(d). We conclude that there are two possible approaches to calculation of economic benefit: (1) the cost of capital, i.e., what it would cost the polluter to obtain the funds necessary to install the equipment necessary to correct the violation; and (2) the actual return on capital, i.e., what the polluter earned on the capital that it declined to divert for installation of the equipment.[31]

In regard to the first of these approaches, the Third Circuit wrote:

> With respect to the cost-of-capital measure used by the district court, we conclude that both the calculation and application are, at the very least, unsupported. The first problem is the government's calculation of the WACC. That calculation relied on values that were not ALC-specific. Instead of using the actual yield on bonds that ALC had issued, the government experts computed the WACC by using the yield on Standard & Poors A-rated bonds. While using the S&P figure might well have been a reasonable approximation of ALC's bonds' yield, a more accurate calculation could easily have been achieved by using figures specific to ALC's bonds.[32]

Additionally:

> A WACC figure based on a company's *existing* capital structure at a given time is not, without further support, necessarily the same as a company's *marginal* or current cost of capital at that time (i.e., what it would cost to obtain additional capital) because new capital might come in a different mix of debt and equity.[33]

And finally:

> . . . if the economic benefit to ALC is to be established by a cost-of-capital measure, the measure to use is ALC's *marginal* or current cost of new capital in the years in question.[34]

Regarding the second approach identified by the appeals court, i.e., using actual rates of return on capital for adjusting past economic savings to present values, the Third Circuit noted:

> On this view, any advantage that ALC enjoyed over its competitors by avoiding the cost of [Clean Water Act] compliance is measured by the return that ALC actually realized on its retained funds or the risk-free return it might have enjoyed using those funds.[35]

In summary, the Third Circuit was not satisfied with the use of WACC as an interest forward rate unless (1) WACC was calculated using company-specific data to the extent it was possible to do so and (2) the WACC rate reflected the current cost of obtaining capital in the market for the specific years in question. The alternative methodology suggested by the Third Circuit would involve adjusting past costs to the present by compounding based either on (1) a company's return on capital or (2) the risk-free rate of interest.

However, the Third Circuit also stated:

> . . . it would be clearly inappropriate to discount all economic benefit backwards to a uniform date using one rate, and then use a different rate to carry that value forward to the date of judgment.[36]

Thus, the appeals court rejected the methodology employed by Dr. Pifer in this case.[37]

In light of the above considerations, the Third Circuit remanded the penalty determination to the district court.[38]

---

[25] 366 F. 3d. at 188.

[26] 366 F.3d at 189.

[27] The statutory maximum has been revised through notice and comment rulemaking at least twice, and is now set at $31,500 per day.

[28] One of the Third Circuit's stated concerns was that the WACCs for 1990, 1991, and 1992 were the highest of the group, but they ''really have no bearing on the economic benefit conferred by post-1992 violatons.'' 366 F.3d. at 184.

[29] 366 F.3d. at 169.

[30] The effect of compounding greatly magnifies the difference between the two rates. For example, at 12.73 percent, $100,000 will yield $231,432 in interest over a ten-year period, nearly triple the $74,080 in interest generated over the same time period at 5.7 percent per annum.

[31] Ibid.

[32] Ibid., at 181.

[33] Ibid., at 182. Emphasis in the original.

[34] Ibid. Emphasis in the original.

[35] Ibid., at 183.

[36] Ibid., at 184.

[37] In contrast to the Third Circuit opinion, the financial methodology used by Dr. Pifer in this case has certain support in the academic literature on corporate finance. See, for example, R.F. Lanzillotti and A.K. Esquibel, ''Measuring Damages in Commercial Litigation: Present Value of Lost Opportunities,'' *Journal of Accounting, Auditing & Finance*, winter 1990, pp. 125-142.

[38] In the Appellant's Brief to the Third Circuit, ALC had also raised various issues about whether the district court had relied on the ''least costly means of compliance'' when it ac-

  DEN ISSN 1060-2976

Preparation for the New Trial

Shortly after the Third Circuit rendered its decision, a trial date for the remanded case was set, for late November 2004.[39]

The Plaintiff's Perspective. The United States fielded a new economic expert witness ''to evaluate what discount rate should be used to estimate the future value of Allegheny Ludlum Corporation's cost of noncompliance with the Clean Water Act as of the penalty payment date,''[40] Dr. Aswath Damodaran. Dr. Damodaran is a professor of finance at New York University's Stern School of Business and the author of several textbooks on corporate finance. The United States also continued to rely on Robert L. Harris. At this stage in the litigation, however, Mr. Harris' role was primarily limited to performing economic benefit calculations based on the discount/interest forward rates selected by Dr. Damodaran.

During Dr. Damodaran's deposition, he stated that he disagreed with the Third Circuit's discussion concerning the use of WACC in this case. However, he said that he did not believe that articulating that fact was his mission. Rather, he believed he had been instructed to ''write what you would as a corporate finance expert on what you would use as a rate of return''[41] in the relevant calculations.

One of the most important statements in Dr. Damodaran's report read as follows:

> The discount rate that we choose to compound ALC's cashflows to the future or discount them to the present should reflect the expected returns on the investments in which ALC would have invested the money at the time of the cash flow, knowing what it did then.[42]

He concluded this was the correct rate through a process of elimination, considering the following choices: the risk-free rate, the actual return on capital earned by ALC in the years following the hypothetical noncompliance date, and ALC's WACC immediately prior to each relevant noncompliance date associated with a particular group of related violations.

According to Dr. Damodaran:

> Dr. Pifer, the expert witness for the company [in the trial in 2001], appears to argue that the treasury bill rate (after-tax) should be used as the discount rate since using any other rate of return (including the cost of capital) would require making assumptions about alternative investments that the company could have made and that investing in treasury bills is an alternative that is available to any investor.[43, 44]

Stating that he strongly disagreed with this rationale, Dr. Damodaran argued that use of the risk-free rate ''requires that we make a very strong assumption that there are no alternative investments in the company's own business and that the savings will therefore be invested in treasury bills.''[45] Furthermore, he pointed out that the company could have invested in ''dot.com'' companies as well. Therefore, he argued, he could have used a much higher rate than the company cost of capital as his ''discount rate.'' In this regard, he wrote:

> In fact, the only way to resolve the issue of where ALC would have invested the money at the time of the cash flow is to look at what ALC said about its investment prospects in its annual filings with the SEC in 1993 and 1994. Each year, ALC presented plans to expand investments and make acquisitions in its existing specialty steel businesses. . . . Finally, in the same filing, the company notes that its existing plants were operating at close to full capacity and that it was purchasing steel slabs from other steel manufacturers. This would suggest to me that ALC was in fact expecting to earn *at least their cost of capital on their new investments and that these investments would be in their existing businesses.*[46]

Regarding the second possible choice considered by Dr. Damodaran, the actual return the company obtained in subsequent years, he argued:

> Even if ALC earned a much lower return on capital in subsequent years than its cost of capital, it cannot be utilized as an argument for using the return on capital as the discount rate for a simple reason. The company *could not have known* this would happen at the time they made the investments.[47]

He continued:

> In closing, I believe that the right discount rate is the third possible choice of ALC's cost of capital at the time of the cashflow. I base my opinion on the company's own claims about investment opportunities in its existing business. I also believe that this cost of capital should be used to compound subsequent replacement investments. If they did in fact earn a lower return than this minimum acceptable return, it reflects poorly on the management of the company but cannot be used as a justification for a lower discount rate at the time of the cashflow.

Stated differently, Dr. Damodaran's methodology applied the expected (i.e., *ex ante*) rate of return embodied in WACC before the date of alleged noncompliance both as a discount rate to apply to future cash flows and as an ''interest forward'' or ''compounding rate'' to apply to past values to determine their present value.

Relying on Dr. Damodaran's financial methodology and the delayed and avoided compliance costs accepted by the district court in 2002, Mr. Harris calculated ALC's economic benefit to be $6,056,322 as of December 31, 2004.[48]

---

cepted the plaintiff's economic benefit calculations. The Third Circuit examined but rejected specific examples ALC cited in this regard. However, noting that no federal court of appeals had addressed whether economic benefit should be based on the least cost means of compliance, it ruled that such an approach should be applied. 366 F. 3d., at 185.

[39] Also, due to the retirement of U.S. District Court Judge Robert J. Cindrich, Chief U.S. District Judge Donetta W. Ambrose was assigned to this case.

[40] Expert Opinion of Dr. Aswath Damodaran dated September 22, 2004.

[41] Deposition of Professor Aswath Damodaran dated October 7, 2004, page 22.

[42] Ibid., page 3.

[43] Ibid.

[44] In his trial exhibit HWP-23 for the February 2001 trial on penalty, Dr. Pifer seems to have offered a different rationale for use of the after-tax risk-free rate as an interest forward rate: ''Based on modern finance theory, the appropriate interest rate is not dependent on whether the perspective is from the point of view of the plaintiff or defendant, but on the systematic risk – or absence of risk – of the cash flows in question.'' The point here is that *materialized* cash flows lack what financial economists call ''systematic'' or ''market'' risk, that is, they do not vary with future changes in the economy.

[45] Ibid.

[46] Ibid., page 4.

[47] Ibid.

[48] Expert Report of Robert L. Harris dated September 22, 2004, page 5.

The Defendant's Perspective. ALC chose to field a new expert witness on economic benefit, Robert H. Fuhrman, one of the co-authors of this article.

The financial methodology Mr. Fuhrman used in his expert report involved (1) adjusting past costs by compounding them forward to the present time based on *ex post* rates of return (that is, rates known only through the use of hindsight) and (2) adjusting future costs to the present time through discounting based on an expected (or *ex ante*) rate of return.

In deference to the Third Circuit opinion, Mr. Fuhrman utilized two different approaches to adjusting past costs to present values. The first of these relied on ALC's actual return on capital employed,[49] and the second was based on the after-tax, risk-free rate associated with short-term U.S. Treasury bills.[50,51] As Mr. Fuhrman pointed out, academic literature supports two approaches to adjusting past cash flows to present values: (1) use of the after-tax, risk-free rate associated with short-term U.S. Treasury bills and (2) use of the defendant's after-tax debt rate.[52] Noting that there were years in which ALC did not borrow during the period of noncompliance and that he had other concerns regarding the use of the after-tax defendant's debt rate, Mr. Fuhrman did not employ the after-tax defendant's debt rate as an interest forward rate in this case.

Based on use of the after-tax, risk-free rate as the interest forward rate and the same delayed and/or avoided costs that Mr. Harris used in his expert report of September 22, 2004, Mr. Fuhrman calculated ALC's economic benefit to be $1,527,886 as of December 31, 2004,[53] which was approximately one-quarter of the economic benefit result produced by Mr. Harris, relying on Dr. Damodaran's WACC rates and methodology.

In his rebuttal, Mr. Fuhrman pointed out that Dr. Damodaran's report did not provide citations to well-accepted financial principles or use published financial literature to support its reliance on an *ex ante* interest forward rate(s).[54] Instead, he noted that Dr. Damodaran had derived his interest forward rate methodology through a process of elimination and not by providing ''any explanation of why it is necessary to use an *ex ante* discount rate or interest forward rate in concert with *ex post* information,''[55] i.e., cost, date, and tax rate information known only through use of hindsight.

In his deposition, Mr. Fuhrman also expressed concerns about whether Dr. Damodaran should have relied on statements in ALC's 1993 and 1994 SEC filings to draw conclusions about ALC's intended use of funds in 1990, 1991, and 1992. By examining ALC's annual reports for 1989 and later years, Mr. Fuhrman also observed that ALC had used substantial sums of money for purposes other than making investments in capital equipment during many of the years in question, using millions of dollars to pay down debt, buy back shares of common stock, and pay dividends, all of which he concluded undermined Dr. Damodaran's stated rationale for his methodological conclusions.

The Settlement

The case was hard-fought for over nine years, including legal battles both in U.S. District Court and the U.S. Court of Appeals. The case settled only after the company received a favorable appellate ruling; a new exchange of expert reports and a new round of depositions had taken place; and the district court in 2004 had rejected various motions *in limine* submitted by the United States related to the lab error defense and the multiplier associated with monthly average violations.

Although there is room to argue that settlement reflected many different factors, it seems to us highly unlikely that the settlement for $2.375 million just ''reflected that Allegheny Ludlum has generally complied with its permits for several years, thereby reducing adverse impact to the environment.''[56] We think a more likely explanation is that EPA feared the precedents that could have been established by fully adjudicating the case and that it did not have sufficient reason to believe that on remand the district court would have established a civil penalty higher than $2.375 million.

Stated differently, we believe that EPA recognized that, despite its poker face, it held a losing hand.

[49] On page 4 of his expert report, Dr. Damodaran stated that ''[t]he return on capital is generally computed by dividing the after-tax operating income of a firm *by the book value* of the capital (interest bearing debt and equity) invested in the firm.'' However, Mr. Fuhrman's relevant calculations were based on the market value of the firm, rather than its book value.

[50] According to chapters 7, 8, 9, and 19 of the sixth edition of Brealey and Myers' widely-used textbook *Principles of Corporate Finance*, cash flows should be adjusted across different time periods to reflect the riskiness of the cash flows and the time value of money. (See footnote 52, which builds on this point.)

[51] As one stands in the present, there is no systematic (i.e., nondiversifiable) risk associated with past cash flows. That is, since past amounts are certain and fixed in time, there is no reason to adjust them with a ''market risk premium'' that reflects variability to due to general economic conditions. In order to capture only the pure time value of money and to exclude market risk (i.e., systematic risk) where it does not exist, a ''risk-free rate'' should be used to make the interest forward rate adjustment to past cash flows.

[52] The articles include Franklin M. Fisher and R. Craig Romaine, ''Janis Joplin's Yearbook and the Theory of Damages,'' *Journal of Accounting, Auditing & Finance* 5 (Winter/Spring 1990), pp. 145-157; R.F. Lanzillotti and A.K. Esquibel, ''Measuring Damages in Commercial Litigation: Present Value of Lost Opportunities,'' *Journal of Accounting, Auditing & Finance* 5 (Winter/Spring 1990), pp. 125-142. See also, Patell, Weil & Wolfson, ''Accumulating Damages in Litigation: the Roles of Uncertainty and Interest Rates,'' 11 *Journal of Legal Studies*, pp. 341-364; and Michael J. Podolsky, ''The Use of the Discount Rate in EPA Enforcement Actions,'' *Case Western Reserve Law Review*, Summer 2002, Vol. 52, No. 4, pp. 1009-1032 .

[53] Expert Report of Robert H. Fuhrman, September 29, 2004, page 5.

[54] Ibid., page 20.

[55] Ibid., page 21.

[56] EPA Region III, February 1, 2005 press release regarding Allegheny Ludlum, page 2.

   ISSN 1060-2976