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VALUING CONTINGENT OR DISPUTED ASSETS AND LIABILITIES IN SOLVENCY OPINIONS

A variety of methods may be appropriate, depending on the context, to value contingent or disputed assets or claims in solvency opinions. These include probability discount, hindsight, and traditional valuation of future earnings. Other more novel possibilities are the cost of insurance or Monte Carlo simulation. The authors discuss the cases, and the uses and limitations of the various methods.

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Whether under bankruptcy law or state fraudulent transfer statutes, corporate transactions can be subject to later attack if undertaken while the corporation is insolvent. Given that grave consequence, clarity about solvency of the corporation is essential. Yet it is frequently elusive.

This article addresses one cause of the uncertainty: the requirement, under both bankruptcy law and state fraudulent transfer statutes, that contingent or disputed assets and liabilities be included in the analysis. These are entitlements (in the case of assets) or obligations (in the case of liabilities) that will arise, if they ever do, only in the event that certain extrinsic circumstances obtained in the future or after the disputes about such claims have been resolved. The classic example of a contingent liability is a guaranty of another company's debt. The contingency is the possibility that the other company will default on its debt. A classic example of a contingent asset is an earn-out payment. The contingency there is whether future performance ultimately satisfies the criteria for entitlement to the payment. The classic example of a disputed claim is a lawsuit, whether the company is the plaintiff (a disputed asset) or a defendant (a disputed claim).

Neither the relevant bankruptcy and state statutes, nor GAAP, nor judicial authorities offer much guidance on how to incorporate these types of assets and liabilities into solvency determinations. This article will suggest relevant facts and approaches that the expert should consider in the absence of such guidance.

SOURCES OF GUIDANCE

Federal and State Statutes

Both the Bankruptcy Code and the Uniform Fraudulent Transfer Act (UFTA) require the inclusion of

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contingent and disputed assets and liabilities in determining solvency.

Congress defined insolvency in section 101(32) of the Bankruptcy Code for most entities as the "financial condition such that the sum of such entity's debts is greater than all of such entity's property, at a fair valuation. . . ."[1] The UFTA has a virtually identical definition of insolvency: "A debtor is insolvent if the sum of the debtor's debts is greater than all of the debtor's assets at a fair valuation."[2] In both cases, this solvency measure is usually described as a "balance sheet" test.

Congress did not define "property" in the Bankruptcy Code, but it is clear that "property" encompasses both contingent and disputed assets.[3] Congress did, however, define the term "debts." In section 101(12) of the Bankruptcy Code, "debt" is defined as "liability on a claim," and "claim" is defined in section 101(5) of the Bankruptcy Code as a "right to payment, whether or not such right is reduced to judgment, liquidated, unliquidated, fixed, *contingent*, matured, unmatured, *disputed*, undisputed, legal, equitable, secured, or unsecured. . . ."[4] The UFTA uses essentially the same definitions.[5]

That, however, is where the statutory guidance ends. Although both the Bankruptcy Code and UFTA make clear that contingent or disputed assets and liabilities must be included in determining a corporation's solvency, neither gives any indication of *how* that is done. This is not a trivial problem. Take, for example, a corporation's guaranty of another company's $10 million debt. Should the solvency analysis treat the guaranty as a $10 million liability, or no liability at all, or something in between? The statutes do not say.

Generally Accepted Accounting Principles

Although one might be tempted to look to generally accepted accounting principles for guidance for the treatment of contingent or disputed assets and liabilities in a solvency opinion, the law is clear that GAAP principles are not controlling in this context. As one court has put it, "there is no generally accepted accounting principle method for analyzing the insolvency of a company."[6] That observation is particularly important in the case of contingent or disputed assets and liabilities. A GAAP-compliant balance sheet will only reflect contingent or disputed assets and liabilities in certain narrow circumstances.[7]

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[1] 11 U.S.C. § 101(32).

[2] UFTA § 2(a). UFTA also contains a rebuttable presumption of insolvency if the debtor fails the equitable or cash-flow test for insolvency – that is, the debtor is not paying its debts as they become due.

[3] *See, e.g.*, *In re Hall*, 304 F.3d 743 (7th Cir. 2002) (characterizing a legal claim as a "contingent asset" and including it in the solvency analysis).

[4] 11 U.S.C. § 101(5) (emphasis added). Claim is also defined to include a "right to an equitable remedy for breach of performance if such breach gives rise to a right to payment, whether or not such right to an equitable remedy is reduced to judgment, fixed, contingent, matured, unmatured, disputed, undisputed, secured, or unsecured." *Id.*

[5] UFTA § 1(5) provides that "debt" means "liability on a claim" and UFTA § 1(3) provides that "claim" means "a right to payment, whether or not the right is reduced to judgment,

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liquidated, unliquidated, fixed, contingent, matured, unmatured, disputed, undisputed, legal, equitable, secured, or unsecured."

[6] *In re Kaypro*, 230 B.R. 400, 413 (B.A.P. 9th Cir. 1999).

[7] Under GAAP, once it is known that a loss contingency exists, the entity must determine where on a continuum – from *remote* to *reasonably possible* to *probable* – the contingency lies. An entity need only record a contingent liability as a charge to income if two conditions are satisfied: (1) information available before issuance of the financial statements indicates that it is probable that an asset had been impaired or a liability had incurred at the date of the financial statements and (2) the amount of loss can be reasonably estimated. Accounting Standards Codification ("ASC") 450-20-25-2. If it is not probable that a loss has been incurred or a probable loss cannot be reasonably estimated, the entity must disclose only related information. ASC 450-20-50-5. If there is only a remote possibility of loss, the entity does not accrue or disclose the loss contingency at all (unless the contingency concerns guarantees). ASC 450-20-50-6. Similarly, GAAP prohibits the recognition

The court mandated treatment of contingent or disputed assets and liabilities in a solvency analysis is far different.

Judicial Authority

The treatment of contingent or disputed assets and liabilities in the context of a solvency analysis requires a judgment regarding the *probability* that the particular contingent circumstance will obtain. Unlike GAAP, however, there is no threshold of likelihood that must be met to warrant inclusion; nor do difficulties in estimating the ultimate cost or gain relieve the corporation from putting down a number. This approach is epitomized by the Seventh Circuit's decision in *In re Xonics Photochemical, Inc.*[8]

Although *dicta*, the *Xonics* court stated that a contingent liability should neither be listed on the balance sheet at its full face amount nor should it be listed at zero. Instead, the court explained that "[t]o value the contingent liability it is necessary to discount it by the probability that the contingency will occur and the liability become real."[9] This has often been referred to as the "probability discount rule."[10] The Seventh Circuit later refined the "formula" for the probability discount rule as follows: the value of a contingent liability = face amount of liability x likelihood of occurrence at time of challenged transfer.[11]

The Third Circuit Court of Appeals in *Mellon Bank, N.A. v. Official Committee of Unsecured Creditors of R.M.L., Inc.* (*In re R.M.L., Inc.*)[12] and the Eleventh Circuit Court of Appeals in *Advanced Telecommunication Network Inc. v. Allen* (*In re Advanced Telecommunication Network Inc.*)[13] have also adopted the probability discount rule. Several lower courts have followed *Xonics* as well in the case of liabilities and assets.[14]

While the probability discount rule is easy to state, there are only a few cases that have had to apply it in practice. The determination of the probability of a future event is necessarily speculative and uncertain, and *Xonics* cannot tell anyone how to predict the future. There is simply no rule or formula for doing so. Indeed, consistent with that, courts confronted with the challenge appear uniformly to punt on the issue and instead assume, with little or no analysis, either a 50% or 100% probability.[15] In addition, in some cases of contingent or

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of contingent assets, based on the perspective that including a contingent asset on the balance sheet might result in the recognition of income that is never realized. However, if an inflow of economic benefits is probable (that is, more likely than not), the contingent asset should be disclosed in the Notes to the Financial Statements but still not recorded on the balance sheet. If, however, the inflow of economic benefits is virtually certain, then the related asset is not "contingent" on an event occurring and, therefore, it should be recognized in the financial statements. ASC 450-30-25-1.

[8] *Xonics Photochemical, Inc. v. Mitsui & Co. (In re Xonics Photochemical, Inc.)*, 841 F.2d 198 (7th Cir. 1988).

[9] *Id.* at 200.

[10] Many have opined that *Xonics* created the following formula for the probability discount rule – value of contingent liability = *face amount of liability* x likelihood of occurrence at time of challenged transfer. However, the example in *Xonics* actually multiplied the debtor's *net assets* (as opposed to the face amount of liability) by the probability of the contingency occurring, which would be from the creditor's perspective. The Seventh Circuit later cleared up any confusion created in *Xonics* in *Covey v. Commercial National Bank of Peoria*, 960 F.2d 657, 660 (7th Cir. 1992), stating that

> [w]e did not hold [in *Xonics*], however, that this is the calculation the Code requires. Xonics used an illustration to demonstrate discounting; the parties did not debate, the case did not depend on, and we therefore did not decide, whether the creditor's perspective is the right one. . . . The Bankruptcy Code requires us to assess things from the debtor's perspective.

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[11] *Id*.

[12] 92 F.3d 139 (3d Cir. 1996).

[13] 490 F.3d 1325 (11th Cir. 2007).

[14] *In re Hoffinger Indus. Inc.*, 313 B.R. 812 (Bankr. E.D. Ark. 2004); *In re Merry-Go-Round Enters., Inc*., 229 B.R. 337 (Bankr. D. Md. 1999); *In re Werner*, 410 B.R. 797 (Bankr. N.D. Ill. 2009); *In re Apex Automotive Warehouse, L.P*., 238 B.R. 758 (1999) (applying *Xonics* to a contingent asset – a cause of action – and reducing the litigation proceeds by the probability of a successful judgment).

[15] *In re Advanced Telecomm. Network, Inc.*, Case No. 6:03-bk-00299-KSJ, 2009 Bankr. LEXIS 2028, *13-14 (Bankr. M.D. Fla. July 10, 2009) (court refers to auditor's determination that actual liability was "remote" and the debtor's rejection of a settlement offer to value claim at 50% of settlement offer); *In re Hoffinger Indus., Inc.*, 313 B.R. at 826-27 (Bankr. E.D. Ark. 2004) (assumes a 100% probability in order to "view this issue in the light most favorable" to defendant); *In re Apex Auto.*

disputed assets or liabilities, there may be other, more appropriate approaches to determine values.

OTHER VALUATION METHODS

Whether the probability discount rule should apply, and whether one method or another can be used to determine the value of a contingent or disputed asset or claim, may be influenced by a number of case-specific facts, such as the following:

- Is the asset or claim a unique item, or are there hundreds or thousands of similar occurrences having the same or similar characteristics?
- Is the valuation date in the past and was the contingency or dispute resolved *after* the valuation date and *before* the date the valuation opinion is rendered, such that hindsight is available?
- Is the non-balance sheet asset capable of being valued with traditional valuation methodology? Can the value of the non-balance sheet liability be valued by the cost of insurance? By Monte Carlo methods?

We consider each of these settings below.

One Contingency vs. Many

Some cases involve the valuation of a single item: for instance, a single guarantee of a particular debt, or a single, significant lawsuit. Other cases may require the court to value numerous similar items such as product liability claims, or "mass tort" claims such as personal injury or death from exposure to asbestos.

Even a single guarantee of a particular debt immediately presents considerable challenges to the expert. The financial condition of the primary obligor must be assessed – and if there is sufficiently high likelihood of default and a call on the guaranty, a further analysis will be required to determine the likely amount of the deficiency that may be asserted against the guarantor (since, even if a liquidation, the primary obligor may pay a percentage of the face amount of the claims asserted against it).

A single pending lawsuit presents its own, unique problems. The claim may have only been recently filed, and the damages, assuming liability, may not have been quantified by the plaintiff. Substantial legal defenses may stand between the plaintiff and any recovery. Even if discovery is complete and the matter is poised for trial, counsel for the company being valued will not likely wish to put a number on a probable outcome.

Where there are hundreds or thousands of similar claims asserted against the company being valued – unless the surge of claims is so new that few, if any, have been resolved – the expert should have a rich source of predictive information: a history of settlements or win/loss records when cases have gone to trial, as well as high, low, and average verdicts; and the pending lawsuits, pending demands, and in some cases, third-party estimates of future claims. As will be seen below, this is an example that raises the issue whether the use of hindsight is permissible.

Disputed Claims Later Resolved – Hindsight

Sometimes an expert is asked to provide a solvency opinion at or on the valuation date – for example, when a company is considering, and then closing, a transaction, and wishes to have contemporaneous evidence that the company was solvent at the time of the transaction. If the company has a contingent or disputed liability to be taken into account, the expert cannot know for certain what the future will bring. There is no opportunity to use hindsight because the future has yet to unfold and be observed.

In other cases, the solvency opinion is being rendered about the condition of the company at an earlier time. This is always the case when fraudulent transfer litigation has been commenced or is being considered – the challenged transfer occurred in the past, and dueling experts will opine whether or not the company was solvent at the time of the transfer. In these cases, it can sometimes be the case that an important disputed claim that was *unresolved* at the time of the transfer *has been resolved* – by a court decision, or a settlement – by the time the valuation opinion is to be rendered. Here, there is an opportunity to use hindsight, if the court allows it to be used.

Some courts have allowed hindsight to be used when it is available to value such later resolved disputed liabilities. For example, in the case of *SEC v Antar*,[16] involving constructively fraudulent transfers, a central issue was whether the defendant was insolvent. The SEC moved for summary judgment, which the court granted, resolving the question this way:

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Warehouse, L.P., 238 B.R. 758, 772 (assumes a 50% probability without analysis).

[16] 120 F. Supp. 2d 431 (D.N.J. 2000).

> The SEC asserts that as a result of its unliquidated securities fraud claim against Sam M., he was insolvent at the time of each and all of the 1991 and 1997 transfers. The fact that the SEC's claim had not yet been reduced to judgment does not undermine Sam M.'s insolvent status.
>
> It is *now clear* that the value of the SEC's unliquidated claim against Sam M. was, and is, approximately $15 million, exclusive of prejudgment interest in the amount of approximately $42 million, as ordered by this court [in a previous judgment]. Because the SEC's claim was based on Sam M.'s securities fraud in the 1980s, Sam M. possessed this debt at the time of all the 1991 and 1997 transfers.[17]

Other cases involving disputed liabilities have taken the same approach.[18]

The court in *Advanced Telecommunication Network, Inc. v. Allen* (*In re Advanced Telecommunication Network, Inc.*),[19] failed to consider this approach in the case of a disputed liability and following *Xonics* treated the situation as an unresolved contingent liability. A lawsuit was pending when a transfer was made, and before the trial of the fraudulent transfer case, the lawsuit had been settled. The Eleventh Circuit ruled that the "value" of the lawsuit should be determined by the probability discount rule, and ignored the actual settlement of the lawsuit as an even more accurate – and easily referenced – determination of value.

Hindsight has been criticized as causing the decision maker to overestimate the predictability of bad outcomes. As one commentator has observed:

> Because the hindsight bias makes bad outcomes seem more predictable than they really were at the time, it can lead hindsight evaluators to assume that reasonable persons would have taken more precautions than the defendant did. Many studies have demonstrated that evaluative judgments are linked to assessments of foreseeability. Individuals who know the outcome of a decision not only overestimate the predictability of bad outcomes, but also are more likely to evaluate the decision negatively.[20]

By contrast, the benefit of using hindsight in situations where the *disputed* liability has become fixed by the time that a transaction is challenged is accuracy. In the case of a disputed liability that existed at the time of the transaction – as compared to a contingent one – all of the facts giving rise to the claim had already occurred.[21] All that remained was the final resolution of that claim – by settlement, by arbitration, or by a judgment from a trial court. If a final resolution has occurred, one must wonder what reason there might be to make an expert make a "prediction" about the amount of the claim.[22] Allowing the use of hindsight relieves all parties, including the expert, from having to make a theoretical determination of fair value, thereby removing

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[17] 120 F. Supp. 2d at 443 (citations omitted; emphasis added).

[18] *Tri-Cont'l Leasing Corp. v. Zimmerman*, 485 F. Supp. 495, 500 (N.D. Cal. 1980) (citing with approval the case of *Baker v. Geist*, 321 A.2d 634 (Pa. 1974), where "the court held that the mere assertion of a claim for personal injuries arising out of an automobile accident constitutes an existing debt even prior to the filing of the lawsuit. The court apparently looked to the amount of the ultimate judgment for its estimate of the probable liability on the debt at the time of the conveyance.").

[19] 490 F.3d 1325 (11th Cir. 2007).

[20] Philip G. Peters, Jr., *Hindsight Bias and Tort Liability: Avoiding Premature Conclusions*, 31 Ariz. St. L.J. 1277, 1280 (1999).

[21] Cases recognize that the words "contingent" and "disputed" have distinct meanings. "It is settled . . . that the terms disputed, contingent, and liquidated have *different* meanings." *Nicholes v. Johnny Appleseed of Wash.* (*In re Nicholes*), 184 B.R. 82, 88 (B.A.P. 9th Cir. 1995) (emphasis added). "[T]he rule is clear that a contingent debt is one which the 'debtor will be called upon to pay only upon the occurrence or happening of an extrinsic event which will trigger the liability of the debtor to the alleged creditor.' . . . 'A tort claim ordinarily is *not contingent* as to liability; the events that give rise to the tort claim usually have occurred and liability is *not dependent* on some future event that may never happen. It is immaterial that the tort claim is not adjudicated or liquidated, or that the claim is disputed . . . .'" *Loya v. Rapp* (*In re Loya)*, 123 B.R. 338, 340 (B.A.P. 9th Cir. 1991) (citations omitted).

[22] In a fraudulent transfer case where it is alleged that the debtor made the transfer with "actual intent to hinder, delay, or defraud" creditors, it is fair to have testimony about what the debtor thought about the disputed claim before it was resolved, and whether that belief was or was not reasonable in light of what was known at the time of the transfer. But the debtor could, in fact, be insolvent, even if the debtor didn't subjectively "know" that to be the case.

at least one variable of uncertainty in the overall insolvency analysis.

The bankruptcy court in *W.R. Grace & Co. v. Sealed Air Corp.* (*In re Sealed Air Corp.*)[23] found the probability discount rule inapplicable when valuing future asbestos claims. Because the probability discount rule did not apply, the court permitted the use of hindsight to measure the future liabilities on the transaction date.

W.R. Grace & Co. filed a bankruptcy petition in April 2001 in response to the mass assertion of asbestos claims against it. The bankruptcy court authorized two creditors' committees to bring an adversary proceeding seeking to avoid as fraudulent the debtor's 1998 sale of its food packaging unit Cryovac to Sealed Air Corporation. The creditors' committees alleged that the sale should be avoided as a constructively fraudulent transfer because Sealed Air grossly underpaid for Cryovac and the debtor was insolvent at the time of the sale.

Before trial, the parties filed motions seeking a ruling from the bankruptcy court concerning the proper method to determine whether the debtor was solvent at the time of the sale. The court was forced to consider whether, under UFTA's definition of insolvency, claims of individuals already exposed to asbestos, but who had either not yet become ill or sued the debtor, should be accounted for in computing the debtor's liabilities.

Sealed Air urged the court to adopt a "reasonableness" standard, where the only asbestos-related liabilities to be considered to determine solvency as of the transaction date were those known on that date, or that the debtor reasonably should have known at the time. The creditors committee argued that the court should be able to use hindsight. The court recognized that "the difference in result, depending on which theory is adopted, may be dramatic."[24]

The court ultimately held that an asbestos claim filed after the transfer date could be considered in determining the debtor's solvency on the transaction date. The court explained that, "[f]or the probability discount rule to apply in this case . . . the Court must find that the post-1998 asbestos claims against W.R. Grace represented a contingent future liability on the date of the transfer."[25]

The court stated that it "makes its . . . ruling on the assumption either that manifestation had already occurred with respect to the post-1998 claimants or that the relevant state's law does not require manifestation in latent toxic tort cases."[26] The court further found that "many, and no doubt a substantial majority, of [asbestos victims] had some physical manifestation of their exposure, whether they knew it at that time or not. Exposure and physical manifestation doubtless gave the affected person a claim under the laws of most states."[27] Thus, the court avoided the application of the probability discount rule by determining the claims were non-contingent.

On the other hand, in *Diamond Power International Inc. v. Babcock & Wilcox Co.* (*In re Babcock & Wilcox*),[28] the bankruptcy court reached the opposite conclusion, holding that in determining the amount of future asbestos liabilities for solvency purposes, "the court cannot use hindsight and can only determine whether the predictions by [Babcock] were reasonable under the circumstances existing at the time they were made."

In *Babcock*, an asbestos claimants' committee and future claimants' representative brought an adversary proceeding against the debtor seeking to avoid two pre-petition transfers. The *Babcock* Court noted that, in considering the uncertainties associated with estimating future asbestos claims, the debtor's reasonableness in evaluating these claims at the time of the transfer is critical to a bankruptcy solvency analysis. The court acknowledged that Babcock's future liability estimates "do not reflect the correct actual amount of [Babcock]'s future asbestos liabilities that were predictable as of July 1, 1998." However, relying on the defendants' "good faith," the court reasoned that if it disregarded the defendants' projections and relied on testimony as proof of the incorrectness of Babcock's 1998 estimates, it would be indulging in an incorrect use of hindsight.[29]

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[23] 281 B.R. 852 (Bankr. D. Del. 2002).

[24] *Id.* at 857.

[25] *Id.* at 859.

[26] *Id.* at 863.

[27] *Id.* at 862.

[28] 274 B.R. 230, 262 (Bankr. E.D. La. 2002).

[29] A full discussion of those times when hindsight has been permitted, or has not been permitted, in the context of valuations is beyond the scope of this brief article. Here are some additional cases: *R.M.L. Inc.*, 92 F.3d at 156 ("a court [must] look[] at the circumstances as they appeared to the debtor and determine whether the debtor's belief that a future event would occur was reasonable. The less reasonable a debtor's belief, the more a court is justified in reducing the

Traditional Valuation Methodology

An earnout – a classic contingent asset – is a common feature of an M&A transaction when the seller has a higher perception of the value of the business being sold, or the likelihood of future projections coming to pass, than the buyer does. It is not uncommon for buyers to say "I am not willing to pay you today based on those forecasts, but if you can actually deliver, I will pay you in the future." An earnout provision is a means to close the pricing gap between the buyer and the seller.

If the earnout is based on future EBITDA[30] – typically with certain hurdles that must be exceeded – the expert's task is very similar to the valuation of any business enterprise based on future earnings. Future earnings are always uncertain. Uncertainty can be assessed, in part, by using a scenario-based analysis, in which the expert assigns a probability to the uncertain variables using the base case, upside case, and downside case of management's (or the expert's) projections of future earnings. Although this approach still requires the exercise of judgment about the future EBITDA, historical performance, anticipated industry growth, expected margins, and other observable inputs, can guide the analysis. The anticipated future cash flows from the earnout can be discounted to a present value. For this contingent asset, the simple probability discount rule of *Xonics* is incomplete. Rather, the accumulated learning used in valuing a business, or a business line, is needed, with such tailoring as is needed to match the contractual requirements of the earnout.

Cost of Insurance

One of the more novel ideas surrounding the valuation of contingent liabilities is the concept of determining the value of the item based on the cost of the insurance required to insure against the event occurring. This situation appears very applicable to environmental clean-up costs, or potential product liability claims. There is a vast network of specialized insurers who will insure against the risk of almost anything. The present value of the cost of insuring against the event over a reasonable time is one way to glean the value of the contingency. Although the use of indicative coverage prices as a proxy for the value of a contingent liability has not yet been litigated, the authors are aware that some valuation professionals have relied, at least in part, on this approach.

Monte Carlo Simulation

Monte Carlo analysis generates not just a range of possible outcomes, but also a formalized mechanism for estimating the likelihoods of different outcomes.[31] It is probabilistic in nature and involves statistical random sampling techniques that simulate the various sources of uncertainty and calculate an average or expected value over a range of thousands of resultant outcomes.

In the case of *In re Tronox*,[32] the plaintiff's expert used Monte Carlo analysis to determine that approximately 68,000 future claims would be filed and

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assets (or raising liabilities) to reflect the debtor's true financial condition at the time of the alleged transfers."); *WRT Creditors Liquidation Trust v. WRT Bankruptcy Liquidation Master File Defendants* (*In re WRT Energy Corp.*), 282 B.R. 343, 383 (Bankr. W.D. La. 2001) (writing down a performing asset to zero on account of later events that were unanticipated and unforeseeable as of the valuation date was improper; "use of hindsight is inappropriate in determining value of assets at a particular point in time"); *Heilig-Meyers Co. v. Wachovia Bank, N.A.* (*In re Heilig–Meyers Co.*), 319 B.R. 447, 466 (Bankr. E.D. Va.2004), *aff'd* 328 B.R. 471 (E.D. Va. 2005) (rejects values derived from consideration of post-bankruptcy events; courts "should ignore a decline in value of the debtors' liabilities in the hands of creditors resulting from creditors' post-petition fears that debtors would not honor their debts"); *Gillman v. Scientific Research Prods., Inc.* (*In re Mama D'Angelo, Inc.*), 55 F.3d 552, 556 (10th Cir. 1995) (courts "may consider information originating subsequent to the transfer date if it tends to shed light on a fair and accurate assessment of the asset or liability as of the pertinent date. Thus, it is not improper hindsight for a court to attribute current circumstances which may be more correctly defined as current awareness or current discovery of the existence of a previous set of [knowable] circumstances.") (internal citations omitted). *Accord Payne v. Clarendon Nat'l Ins. Co* (*In re Sunset Sales, Inc.*), 220 B.R. 1005, 1016-17 (B.A.P. 10th Cir. 1998) (not improper use of hindsight to value assets (as of one year prior to petition) by referring to price paid for assets in bankruptcy sales and adjusting the value upward to account for depreciation of the assets between valuation date and sale date, where debtor was deemed on its "deathbed" at the time of the transfers).

[30] EBITDA means Earnings before Interest, Taxes, Depreciation, and Amortization.

[31] *See generally* Michael O. Finkelstein & Bruce Levin, Statistics for Lawyers (2d ed.) 88-89 (Springer-Verlag 2001) (describing Monte Carlo methods and the bootstrap).

[32] Plaintiff's Post-Trial Proposed Findings of Fact, *In re Tronox*, No. 09-01198-alg (Bankr. S.D.N.Y. Nov. 20, 2012) ECF No. 591.

that the total costs of these future claims would be approximately $308 million.[33] The expert also applied Monte Carlo simulation to estimate the cash flow required for these liabilities from January 2006 through December 2012, in 2005 dollars (the transaction date), to be $123.1 million.[34] The Monte Carlo simulation generated 40,000 estimated seven-year monthly tort liability cash flow series.[35]

The use of Monte Carlo simulation has survived a *Daubert*[36] challenge. In *Lyondell Chemical Co. v. Occidental Chemical Corp.*,[37] potentially responsible parties that each had waste hauled to a disposal site (Turtle Bayou) by hazardous waste disposal company and that had entered into settlements with government to remediate particular areas of site, brought cause of action against other customers of company for apportionment or contribution. To assist in allocating clean-up costs among the liable parties, the district court appointed an expert in environmental engineering, who used a Monte Carlo statistical methodology to calculate the volume of Occidental's waste dumped at Turtle Bayou.[38]

The court described Monte Carlo analysis as follows:

> Monte Carlo measures the probability of various outcomes, within the bounds of input variables; to calculate Occidental's waste volume, for example, [the expert] used the district court's three volume estimates as inputs. Instead of simply averaging the input values, Monte Carlo analysis uses randomly generated data points to increase accuracy, and then looks to the results that those data points generate. The methodology is particularly useful when reaching an exact numerical result is impossible or infeasible, and the data provide a known range – a minimum and a maximum, for example – but leave the exact answer uncertain. Seventy years after its discovery by physicists involved with nuclear weapons research, Monte Carlo analysis is now at home not only in the physical sciences but in a wide variety

[33] In developing the estimates, the expert first identified which of Tronox's 31 wood treatment sites that had not been the subject of litigation likely would receive future claims by evaluating characteristics shared by the five sites where creosote claims already had been filed. The expert determined that 26 of the 31 sites would be subject to future litigation. Second, the expert estimated the number of people potentially exposed to creosote at each of the 26 sites, concluding that claimants would live within two miles of the site (using past settlement agreements and court pleadings). The expert then estimated the population within the two miles radius using census data. Third, the expert determined the claiming rate or propensity to sue by comparing the number of actual historical claims within the two mile radius. The expert determined the claiming rate was 12.5%. Fourth, the expert estimated the cost of future claims by using the historic cost of $5,110 per resolved claim and adding 37% for defense costs, also based on historical averages. Finally, the expert allocated the future costs into specific years by determining the "targeting" rate (that is, the rate at which claims were first filed at new sites historically) and used Monte Carlo simulation to model the timing, number, and identity of future sites that would be targeted. Based on this methodology, the expert determined that approximately 68,000 future claims would be filed at 12 of the 26 sites, costing $308 million. This estimate was consistent with the claims history, where approximately 25,000 claims had been filed at just five sites in the six years before the IPO, and approximately 15,000 of those claims had been resolved for $98 million.

[34] *Id.* The expert estimated the seven-year cash flows for the period January 2006 through December 2012 by performing a Monte Carlo simulation that generated 40,000 estimated seven-year monthly creosote cash flow series. For each month within the seven-year period, she then averaged the 40,000 simulated cash flows series to calculate expected cash flow. The expert used a 2.5% discount rate. The seven year cash flow analysis was important to the Court's determination under the equitable insolvency test – that is, whether the debtor could pay its debts as they came due.

[35] *Id.*

[36] *Daubert v. Merrell Dow Pharms.*, 509 U.S. 579 (1993). *Daubert* essentially holds that the trial judge must perform a "gatekeeper" function of assessing the reasoning and

footnote continued from previous column…

methodology underlying expert's opinion, and of determining whether it is valid and applicable to particular set of facts, before admitting expert testimony. *See also Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137 (1999); Fed. R. Evid. 702.

[37] 608 F.3d 284 (5th Cir. 2010).

[38] The court-appointed expert was tasked with running a statistical analysis to determine disposal volumes for each liable company. The disposal volumes, together with chemical analyses of those volumes, would then enable the court to allocate remediation costs. Although the expert ran the actual calculations, the court determined the inputs he would use. To calculate the amount of Occidental's waste dumped at Turtle Bayou, for example, the court instructed the expert to use three input values: a minimum, an intermediate, and a maximum.

> of fields including, for instance, the world of high finance.[39]

On appeal, the defendant challenged the plaintiff's expert's use of Monte Carlo analysis under *Daubert*. Occidental's *Daubert* challenge relied on five arguments: that the Monte Carlo method used by the expert (1) has not been peer-reviewed as applied to CERCLA allocations; (2) is not generally accepted for use in CERCLA allocations; (3) was developed specifically for use in this litigation; (4) has not been tested as applied to CERCLA allocations and has a rate of error that cannot be evaluated; and (5) is not relevant because it is "equivocal."[40] In affirming district court's use of Monte Carlo simulation, the appellate court held that "just because a Monte Carlo simulation produces a range of outcomes, rather than one single numerical value, does not mean it is speculative. If anything, Monte Carlo analysis provides greater certainty than the basic alternatives: using one of the three data points or using the arithmetic average of all three."[41]

CONCLUSION

The valuation of contingent or disputed assets or liabilities presents a unique challenge in the assessment of a company's solvency. The fact patterns where the issue can be presented can vary markedly, and the variations in fact patterns can, and should, influence the approach the expert takes when estimating values. The key is that "[p]rofessional judgment must be used to select the approach(es) and the method(s) that best indicate the value of the business interest."[42] Courts recognize that valuation "is generally decided through consideration of the approaches [and] methods that are conceptually most appropriate and those for which the most reliable data is available."[43] "No single valuation method is universally applicable to all appraisal purposes. The context in which the appraisal is to be used is a critical factor."[44] Thus, in valuing contingent or disputed assets and liabilities, the expert should evaluate the possible appropriate methods, and then choose and apply the method (or methods) carefully. ■

[39] *Lyondell*, 608 F.3d at 294.

[40] *Id.*

[41] *Id.* at 295.

[42] National Association of Certified Valuation Analysts Professional Standards, Rule 3.7.

[43] *In re Commercial Fin. Servs., Inc*., 350 B.R. 520, 532 (2005) (quoting Business Appraisal Standards promulgated by The Institute of Business Appraisers, Inc. (Publication P–311c) (2001)).

[44] *Id.*