The Guide to Damages in International Arbitration - Fifth Edition
Assessing Damages for Breach of Contract
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This fifth edition of Global Arbitration Review’s Damages in International Arbitration Guide is designed to help all participants in the international arbitration community understand damages issues more clearly and to communicate those issues more effectively to tribunals to further the common objective of assisting arbitrators in rendering more accurate and well-reasoned awards on damages.

The book is a work in progress, with new and updated material being added to each successive edition. In particular, this fifth edition incorporates updated chapters from various authors and contributions from new authors. This edition seeks to improve the presentation of the substance through the use of visuals such as charts, graphs, tables and diagrams; worked-out examples and case studies to explain how the principles discussed apply in practice; and flow charts and checklists setting out the steps in the analyses or the quantitative models. The authors have also been encouraged to make available online additional resources, such as spreadsheets, detailed calculations, additional worked examples or case studies, and other materials.

We hope this revised edition advances the objective of the earlier editions to make the subject of damages in international arbitration more understandable and less intimidating for arbitrators and other participants in the field, and to help participants present these issues more effectively to tribunals. We continue to welcome comments from readers on how the next edition might be further improved.
Assessing Damages for Breach of Contract

Karthik Balisagar and Tim Battrick
FTI Consulting

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INTRODUCTION

Contracting parties usually expect to obtain an economic benefit from the contracts they enter. When those contracts are breached, the remedy claimed often (but not always) takes the form of compensatory damages. One common measure of compensatory damages is ‘expectation damages’, which aim to put the claimant, so far as money can do it, back in the position in which it would have been had the contract been performed.

Expectation damages can be calculated by comparing:

- the financial position that the claimant would have been in absent any breach (i.e., if the respondent had performed the contract) (the ‘but-for position’); and
- the financial position the claimant is actually in given the effects of the breach (the ‘actual position’).

Financial experts often carry out a significant amount of work to construct these two sets of circumstances. Before an expert performs this work, certain steps must be taken in coordination with the legal team to identify the analysis to be performed.

In this chapter, we discuss some common issues that financial experts, lawyers and tribunals may need to consider when assessing compensatory damages:

- the importance of establishing causation in assessing damages;
- the limit to damages based on the foreseeability principle;
- the date of assessment and use of hindsight;
- the period over which the loss should be assessed and the relevance of mitigation;
- implementation of the loss calculation;
- dealing with uncertainty in financial information; and
- one alternative measure of loss: reliance damages.

We refer to our own experience in disputes and to publicly available decisions in litigation and arbitration cases to illustrate these issues. Given the confidential nature of arbitration awards, many of our examples are drawn from litigation, in particular English litigation. In our practical experience, as financial experts who are not lawyers, different legal systems or jurisdictions can have much in common when it comes to measuring compensation, despite using different terminology. That said, the devil can be in the detail of the differences that do exist, and different approaches in law pertaining to, for example, the effects of uncertainty or the burden or standard of proof, can have significant consequences in some cases on possible outcomes for claimants and respondents. It is vital that financial and other experts involved in claims for compensation for breach of contract seek, and obtain, appropriate instruction on factors that depend on questions of law. It may also be important to understand any effects of terms in the contract relevant to the assessment of damages, such as limitations on damages.

To illustrate our discussion, we sometimes refer to the following hypothetical example.

An investor engages a construction company to build a hotel. The hotel is not built to the agreed specification and, when open and operated, is significantly less profitable than the
investor had expected it to be. The investor claims the construction company breached its contract. When quantifying the investor’s loss, the financial experts and lawyers will have to ask the following questions:

- Did the contractor’s failure to stick to the agreed specification cause the investor to suffer any losses at all?
- Were profits lower than expected solely because of the actions of the construction company or as a result of other factors, such as an overly ambitious forecast or an unexpected decline in tourism in the region?
- Did the claimant take any responsive measures to reduce its loss, such as remedial works or a change in pricing strategy?
- Is the contractor liable for the loss of profits resulting from the hotel being denied a specific business opportunity of which the contractor was unaware?

CAUSATION

In our hotel example, the breach of contract might be easily observable and proven, but the investor will still need to demonstrate a causal link between the breach and the losses it has suffered. If the defect resulted in poor ventilation, this may result in poor reviews and fewer guests; however, if the defect meant that the aesthetics of the building were changed in an unnoticeable manner, the breach may not have resulted in any loss. Establishing causation is an important step in assessing damages in many breach of contract claims. The relevant standard of causation depends on the applicable law. Businesses operate in complex environments and their financial performance is affected by multiple factors, so isolating the effect of the alleged breach will not always be straightforward.

One example of a case in which the court found that a breach did not result in any loss to the claimant is *Marathon Asset Management LLP v. Seddon*. Two former employees of the claimant had breached their contractual duties by taking confidential information, but the court awarded only nominal damages of £2 because the employees’ actions had not caused their former employer any financial loss.[4]

If the relevant causation is not proven to the requisite standard then any quantification of damages may be irrelevant to the outcome of the dispute. Extreme instances of this are akin to the proverbial loss of a battle ‘for want of a nail’. In these cases, the loss claimed may be too remote to be recoverable.

FORESEEABILITY

The law in many jurisdictions limits damages for breach of contract to losses that could be reasonably foreseen. This principle of foreseeability may be relevant when damages flowing from the breach are associated with very specific circumstances of the parties. Suppose the hotel in our example lost the opportunity to host an unusually profitable fashion show (which was not contemplated by either the investor or the contractor when the contract was made) as a result of its exhibition halls not being built to the specified dimension. Is the construction company liable for such a loss of opportunity?

Depending on the applicable law, different tests of foreseeability may apply to determine whether such loss of opportunity is recoverable. Financial experts should understand from their instructing counsel whether particular circumstances of the claimant should be considered when assessing damages. In the example above, whether the loss of opportunity...
should be considered may depend on whether the respondent had knowledge of such opportunities (or could reasonably foresee such losses arising from the breach).

**DATE OF ASSESSMENT AND USE OF HINDSIGHT**

The correct date of assessment is a legal issue that may depend on the facts of the case. In our experience, the appropriate date of assessment is one of the first and most important issues that financial experts should discuss with their instructing counsel when constructing the actual and but-for positions. The date of assessment determines the information that should have been known and reasonably knowable by the parties with respect to both the subject company (such as financial forecasts based on contemporaneous business information) and wider market conditions (such as expectations of future commodity prices, interest rates, etc.)

The date of assessment can have a significant effect on the amount of damages assessed. Various legal considerations affect this decision. For example, in investment treaty disputes, differences between lawful or unlawful expropriation of assets may be an important legal consideration when considering the appropriate date of assessment. Consider *Yukos v. Russia*. In this case, the tribunal found that the appropriate date of assessment should be either the date of expropriation (December 2004) or the date of the award (which it deemed to be 30 June 2014) and that the claimant should be entitled to the higher of the valuations at the two dates. The choice of the date of assessment was found to affect the amount of damages by a factor of three.\(^5\) There have been events in recent years that have also had a very significant effect on the value of some assets but within considerably shorter spaces of time than this, such as the covid-19 pandemic and Russia’s invasion of Ukraine.

In breach of contract claims, a general starting point is that damages are assessed as at the date of breach.\(^6\) However, this is not a strict rule, and courts and tribunals have taken into account subsequent events when they deem it appropriate to do so. In the case of *Golden Victory*, the date of assessment was a key matter because a war broke out after the repudiation of the contract. The court took this subsequent information into account as it found it ‘necessary or just to do so in order to give effect to the compensatory principle’.\(^7\)

It may be difficult sometimes to identify a single date of breach. In our hotel example, construction may have taken place over multiple years and it is possible that a series of breaches took place on multiple dates. In other situations, it may be difficult to assess losses reliably given the information set available to the parties at the date of the breach and the great uncertainty at the time of the breach of its effects.

Losses up to the date of assessment are considered past losses and any losses beyond that date are considered ‘future losses’. A discounted cash flow approach is often applied to calculate the present value of future losses using an appropriate discount rate. Further, pre-award interest may be applied to past losses and losses assessed on a past date, up to the date of award. The two diagrams below illustrate the different mechanics of discounting and interest calculations when assessing lost profits at two different dates of assessment, with the simplistic assumption that no external factors materially affected the actual and but-for positions between the two dates. However, in reality, the relevant information sets available on these two dates may differ significantly, for example because of significant movements in commodity prices or a global pandemic. These are all reasons why the appropriate date of assessment is one of the first and most important issues that financial...
experts should discuss with their instructing counsel when constructing the actual and but-for positions.

**FIGURE 1: ILLUSTRATIVE DIAGRAM USING DATE OF BREACH AS DATE OF ASSESSMENT**

**FIGURE 2: ILLUSTRATIVE DIAGRAM USING CURRENT DATE (DATE OF AWARD) AS DATE OF ASSESSMENT**

**PERIOD OF LOSS AND MITIGATION**

Depending on the effects of the breach, the period of loss may be disputed by the parties. Take an example in which a licensee of a luxury retail brand breaches the terms of the licensing agreement by selling goods below an agreed sales price. The experts have been asked to assess the loss that the claimant (the licensor) suffered as a result of the respondent’s actions, which tarnished the claimant’s reputation as a luxury brand. A key question will be the period of loss, which may depend on the time needed for the claimant to ‘rebuild’ its brand.
In many cases, the injured party will not be compensated for losses that it could have avoided by taking reasonable steps in mitigation. It is sometimes reasonable to assume that, after a certain period, the performance of the injured party will recover to what it would have been in the absence of any breach, as a result of the mitigating actions. In our hotel example, the hotel may be able to generate the same profits as if it had been constructed to different specifications as soon as appropriate remedial works have been completed. Alternatively, the effect of the breach will persist indefinitely.

As an aside, the remedial costs required (or spent) to cure the breach may sometimes be relevant in assessing the losses suffered by the claimant. Taking our hotel example, if the only effect of the breach was to cause remedial costs of US$1 million to be incurred to reconstruct the hotel to the contracted specification, then this sum may reflect the amount of the claimant's loss. Whether this is an appropriate measure of damages will depend on the facts and appropriate law. In *Ruxley Electronics & Construction Ltd v. Forsyth*, Forsyth claimed costs to rebuild a swimming pool that was shallower than specified. The House of Lords found that, as the pool was safe to dive into, the cost of cure was not proportionate to the loss in value. It awarded a small sum of damages to cover the claimant's reduction in amenity. The law may take a different approach to this situation in different jurisdictions.

In rare instances, the act of mitigation may eliminate entirely any loss suffered. In *British Westinghouse Electric and Manufacturing Co Ltd v. Underground Electric Rlys Co of London Ltd*, the claimant purchased steam turbines from the defendant, which were found to be defective, and sought damages to recover the cost of substitute turbines. The House of Lords held that the savings from the more effective substitutes that the claimant bought exceeded their costs, so the claimant recovered nothing under this head.

**IMPLEMENTING THE LOSS CALCULATION**

When performing a loss assessment, it is not necessary to consider explicitly all aspects of the actual and but-for positions. If aspects of the claimant's financial position are identical in these two positions, these aspects will cancel out when the actual and but-for scenarios are compared. As an example, if the hotel owner in our example also has hotels in other countries whose performance has not been affected by the events surrounding the one hotel in question, then these properties need not be considered explicitly in any loss calculation.

If the breach has an isolated effect on a single aspect of the business's performance, then the loss can be calculated by examining this incremental effect of the breach on the business's performance. If the breach has a more extensive effect on different aspects of the claimant's business, it may be preferable to calculate the actual and but-for positions explicitly and only then to calculate the loss as the difference between the two. This ensures clarity on the expert's view of the effect of the breach on the claimant's individual revenue and cost streams, which could be affected by the breach to different extents and in differing ways across time. By way of example, the authors have seen claims that identify the revenues that the claimant has lost as a result of the breach but are silent on the effect (if any) of the breach on the claimant's costs. These types of calculations will often result in an incorrect estimate of the loss amount.

**DEALING WITH UNCERTAINTY IN FINANCIAL INFORMATION**
There is necessarily a degree of uncertainty in estimating the but-for position because it represents a hypothetical situation. There is often also uncertainty associated with the future element of the actual position.

One factor affecting the reliability of a loss assessment is the amount of relevant information available. The authors have advised on cases in which the information available has been limited by factors that one of the parties has argued have been outside its control. These include the loss of documents because of war, water damage, fire and the passage of time. The parties in these cases disagreed on whether the weight to be placed on the quantum analysis was affected by the availability of the information.

To assist them in developing financial projections, financial experts may seek to understand the markets in which the relevant business operates (sometimes with the aid of an industry expert), to review contemporaneous indications of expectations, and to apply cross-checks to their assumptions and conclusions. Financial experts often make use of business plans and forecasts made by the parties as starting points when assessing financial performance in the but-for position. The parties may disagree, however, on whether a given forecast presents a balanced view of the prospects of the business. This is particularly likely to be the case when the forecast anticipates a marked change in the business's historical performance, or when the forecast performance relies on factors outside the control of the parties.

To reflect the uncertainty in their assessment, experts may present multiple scenarios for the but-for position or conclude on a range of loss figures. As we explain below, parties and tribunals sometimes consider the assessment of reliance damages when it is not possible to present a well-supported assessment of expectation damages owing to the uncertainties involved.

**RELIANCE DAMAGES (WASTED COSTS)**

Reliance damages are another form of compensatory relief. Reliance damages are assessed based on the costs wasted by the claimant in reliance on the contract. In effect, reliance damages return the claimant to the position it would have been in had the contract never been made.

Owing to the difference in the premise of the but-for position, reliance damages are a strict alternative to expectation damages. Parties should be mindful not to ‘double count’ wasted costs in claims for expectation damages. As put by the tribunal in *Himpurna v. Indonesia*: ‘To ask for the full amount of the future revenue stream [expectation damages] when also claiming recoupment of all investments [reliance damages] is wanting to have your cake and eat it too.’ [10]

If claimants cannot present a well-supported assessment of their expectation losses (for instance, because the business has little track record or an unproven business model), they may claim as an alternative for reliance damages. [11] In many circumstances, the expected benefit to the claimant of performing the contract will be at least as great as the costs incurred in reliance on the contract. This is because a claimant will not typically have entered a contract unless it expected to profit from doing so. If that is no longer the case by the time of the breach, the claimant may be prohibited (as a matter of law) from making a claim for wasted costs.
If a claimant seeks reliance damages, key questions for the expert and legal team can include the following:

- Is it possible to isolate those costs incurred in reliance on the contract rather than relating to other activities?
- What accounting evidence is required to confirm that a cost has been incurred? Is it sufficient to reconcile costs to an accounting system or is it necessary to trace costs back to bank statements and cash outgoings?
- Were the costs incurred excessive?
- Is there any evidence to suggest that the claimant would not have (at least) recovered all its costs if the contract was performed?
- Has the claimant received any benefit as a result of its expenditure? As an example, the costs claimed may include the cost of acquiring an asset that could be sold. Should credit be given for this benefit?

CONCLUSIONS

Every case will have specific circumstances and the issues for the expert and legal team to address will be informed by the facts and the relevant law. We have covered a series of questions that legal teams may need to consider with their experts when quantifying the damages in a breach of contract case. We also offer a flowchart below that may provide a starting point (but not an exhaustive list) when quantifying a claim for damages.
Compensatory damages in breach of contract claims

- Expectation damages: putting the claimant into the position it would have been in had the contract performed
- Reliance damages: wasted costs incurred in reliance of the contract

Points of consideration for compensatory damages
- Causation: relevant causal link in law established between the breach and losses suffered
- Foreseeability: foreseeability of damage caused is in line with facts and required legal standards
- Mitigation: mitigation measures taken/assumed are in line with facts and required legal standards
- Date of assessment: choosing correct date of assessment given the facts and law; consideration given to hindsight if appropriate
- Period of loss: determining the period during which the breach will continue to affect claimant

Endnotes

1 Stuart Amor is a senior managing director, Jose Alzate is a senior director and Thomas Maassen is a director at FTI Consulting LLP.  
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2 Tethyan Copper Company Pty Limited v. Islamic Republic of Pakistan, ICSID Case No. ARB/12/1, Award dated 12 July 2019 (Tethyan v. Pakistan Award), ¶ 1858. We refer to the claimant as ‘Tethyan’, the respondent as ‘Pakistan’ and the case as ‘Tethyan v. Pakistan’.  
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3 International Valuation Standards Council (IVSC), IVS 105: Valuation approaches and methods states that the income approach ‘provides an indication of value by converting future cash flows to a single current value. Under the income approach, the value of an asset is determined by reference to the value of income, cash flow or cost savings generated by the asset’. IVSC: ¶ 40.1.  
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In both cases, we refer to ‘systematic’ risks. By systematic risks, we mean those risks that cannot be diversified away (for example, some of the oil price risk associated with the value of an oil well cannot be fully diversified away by holding a broad portfolio of assets and, therefore, is a systematic risk). This is because, according to financial theory, the market does not compensate investors for taking on risk that they can diversify away.

For instance, an investor might be indifferent between receiving $30 with certainty and receiving an uncertain pay-off that can be either $0 or $100 with equal probability. In this example, $30 would be the certainty equivalent of the risky cash flow with expected pay-off of $50 ($0 * 50% + $100 * 50% = $50). The exact value or discount of the certainty equivalent will depend on the investor’s degree of risk aversion.


For instance, the claimant in **Tethyan v. Pakistan** submitted that the ‘Modern’ DCF ‘incorporates management’s flexibility to choose different options in response to evolving circumstances’. **Tethyan v. Pakistan** Award, ¶ 224.


For instance, Van Putten and MacMillan state that ‘it seems clear to us that discounted cash flow analysis and real options are complementary and that a project’s total value is the sum of their values. The DCF valuation captures a base estimate of value; the option valuation adds in the impact of the positive potential uncertainty’. See Alexander B van Putten and Ian MacMillan, ‘Making Real Options Really Work’, *Harvard Business Review* (December 2004).

For instance, the claimant in **Tethyan v. Pakistan** submitted that ‘[t]he modern DCF method more accurately discounts future cash flows for . . . asymmetric risks’. **Tethyan v. Pakistan** Award, ¶ 224.

International Financial Reporting Standards (IFRS), 13, ¶ B29. As explained below, the IFRS definition of ‘fair value’ is broadly the same as the IVS definition of ‘market value’, discussed below.

**Tethyan v. Pakistan** Award, ¶ 346. As discussed in footnotes 7 and 10 above, the claimant also submitted that this method more accurately accounts for asymmetric risks and can incorporate management’s flexibility. However, as set out above, these are in fact not unique – or necessary – features of the certainty equivalent DCF.

This approach was used by the claimant’s expert in **Tethyan v. Pakistan** Award, ¶ 1425.
14 The tribunal considered the letter to be ‘good evidence of the valuation methodology likely in practice to have been used by an actual buyer in the limited market for large-scale mining enterprises at the relevant time’. *Tethyan v. Pakistan* Award, ¶¶ 347, 348. 


16 CIMVal also states that the certainty equivalent DCF is ‘a recognized DCF method for fair value estimates under accounting guidelines and well supported in valuation and finance theory literature’. Letter to IVSC, op. cit. note 15. We discuss the academic commentary surrounding the certainty equivalent DCF and the IFRS’s recognition of this approach above.

17 CIMVal states: ‘A CeQ [certainty equivalent] DCF approach does not make use of an aggregate discount rate though an implied aggregate discount rate can be derived. The CeQ approach uses targeted risk-adjustments for select cash flow components. These adjustments are done within the CAPM [capital asset pricing model] framework. Market-related uncertainties such as metal and energy prices are risk-adjusted with the CAPM while project-specific uncertainties may be modelled directly with no risk-adjustment. A residual risk adjustment may be necessary to adjust previously risk-adjusted cash flows for risk not explicitly recognized in the model before a final adjustment for the time value of money.’ Letter to IVSC, op. cit. note 15.

18 CIMVal states: ‘A by-product of using the CeQ [certainty equivalent] DCF method is that [the] effective aggregate discount rate implied by this analysis can change with the variation of cash flow uncertainty as a result of changes in operating leverage and other project characteristics. This may be one reason that this approach is used.’ Letter to IVSC, op. cit. note 15.

19 In a standard DCF, different discount rates can in principle be used for different cash flows or time periods, although this is rarely done by market participants in practice. In response to the question ‘Do you use multiple discount rates to reflect the changing risk profile as an extractive process moves through its life cycle?’, CIMVal states: ‘Sometimes. For example, in cases where a static DCF [standard DCF] is being used, higher discount rates may be applied to reflect uncertainties not related to time (such as applying higher discount rates to more geologically uncertain resources)’. Letter to IVSC, op. cit. note 15. Brealey, Myers and Allen (op. cit. note 8, p. 233) state that ‘where risk clearly does not increase steadily’, one should either ‘break the project into segments within which the same [risk-adjusted] discount rate can be reasonably used’ or ‘use the certainty-equivalent version of the DCF model’.
Although there may be other methods by which certainty equivalent cash flows can be obtained from expected cash flows, generally these methods are purely academic, rely on subjective adjustments or are difficult to apply in practice. For example, ‘utility functions’, which specify the level of ‘utility’ of an individual for different financial outcomes, can in theory be used to assess certainty equivalent cash flows, but it is not practically possible to accurately assess investors’ utility functions. See Professor Aswath Damodaran, ‘Risk adjusted value’, pp. 10–11.

For instance, CIMVal stated in its 2012 letter that the certainty equivalent DCF ‘is used for select types of real assets such as natural resource projects’. Letter to IVSC, op. cit. note 15.

Another challenge is that publicly traded futures contracts relate to the delivery of a particular commodity (of a particular standard) at a particular location. Therefore, there may be a mismatch between the commodity used in the project and that underpinning the futures contract.

Average daily value traded between 1 July 2021 and 30 June 2022. This is based on generic futures contracts expiring in 1 month, 13 months, 25 months, 37 months and 49 months, respectively. Oil is based on futures contracts for Brent oil. Copper and aluminium are based on futures contracts traded on the London Metal Exchange. Source: FTI Consulting analysis of Bloomberg data.

In addition, in all three cases, the value of the futures contracts traded with expiry in one year (and thereafter) was dwarfed by the value of one-month contracts, which some analysts use to assess spot prices.

Specifically, the tribunal stated: ‘It is undisputed that there is no market pricing of the systematic risk extending over a 56-year mine life and Prof. Davis specifically agreed at the Hearing on Quantum that the cash flows acquired by the buyer would remain “highly uncertain and highly risky.” The Tribunal therefore concludes that it is likely that a buyer would have assigned a price to assuming this long-term risk by reducing its expectation of the cash flows that the Reko Diq project would generate over the life of the mine by 25%. This results in a reduction of the value of Claimant’s investment by USD 2,430 million: Tethyan v. Pakistan Award, ¶¶ 1425, 1440, 1441, 1521 and 1596.’

For example, companies may ramp up resource production during periods of high commodity prices, and slow down production during periods of low prices. This would be an issue if a single expected production forecast is modelled, but can be theoretically addressed through the combination of a certainty equivalent DCF approach and a Monte Carlo simulation (real options pricing).


For example, initial capital expenditure may include significant labour costs, and those costs may have a systematic component.
There is debate in academic circles regarding the validity or otherwise of the models used to estimate risk premiums, often centred around the CAPM. A summary of this literature is outside the scope of this chapter. For the interested reader, Brealey, Myers and Allen (op. cit. note 8, p. 196) summarise their opinion on the CAPM as follows: ‘The capital asset pricing model captures these ideas in a simple way. That is why financial managers find it a convenient tool for coming to grips with the slippery notion of risk and why nearly three-quarters of them use it to estimate the cost of capital. It is also why economists often use the capital asset pricing model to demonstrate important ideas in finance even when there are other ways to prove these ideas. But that does not mean that the capital asset pricing model is ultimate truth. We will see later that it has several unsatisfactory features, and we will look at some alternative theories. Nobody knows whether one of these alternative theories is eventually going to come out on top or whether there are other, better models of risk and return that have not yet seen the light of day.’

For example, some valuers estimate the equity risk premium using the historical performance of equity compared with government bonds. Other valuers use current market prices and forecasts to estimate an implied future equity risk premium. The equity risk premium is generally multiplied by the ‘beta’, which valuers typically estimate using the correlation between the historical returns on equity of similar companies and the historical returns of the market as a whole, although different valuers may calculate this differently (for example, using different market indexes, time periods and time intervals).

The Organisation for Economic Co-operation and Development defines ‘fair market value’ as ‘the price a willing buyer would pay a willing seller in a transaction on the open market’, while the US Internal Revenue Service defines it as ‘the price at which the property would change hands between a willing buyer and a willing seller, neither being under compulsion to buy or sell and both having reasonable knowledge of relevant facts’. IFRS 13 explains the ‘fair value’ of an asset or liability ‘is a market-based measurement’, namely ‘the price at which an orderly transaction to sell the asset or to transfer the liability would take place between market participants at the measurement date under current market conditions’. IVS 104 Bases of Value, IVSC, ¶¶ 30.1, 100.1, 110.1; and IFRS 13, ¶ 2.
38 ibid., ¶ 254.  ~ Back to section

39 This includes the experience of one of the authors at various investment banks (between 1994 and 2015, Stuart Amor worked at Credit Suisse, ING, UniCredit and RFC Ambrian) as either an equity analyst covering the oil and gas industry or as a global head of research overseeing the bank’s coverage of all sectors, including mining.  ~ Back to section

40 *Tethyan v. Pakistan* Award, ¶ 347.  ~ Back to section

41 In its ‘Standards and Guidelines for Valuation of Mineral Properties’, dated February 2003, CIMVal comments that the certainty equivalent DCF was ‘[n]ot widely used and not widely understood but gaining in acceptance’. CIMVal refers to the certainty equivalent DCF as an ‘Option Pricing’ income approach; available at [https://www.mrmr.cim.org/media/1020/cimval-standards-guidelines.pdf](https://www.mrmr.cim.org/media/1020/cimval-standards-guidelines.pdf) (last accessed 18 October 2022).  ~ Back to section

42 For instance, Professor Pablo Fernandez regularly conducts surveys of the risk-free rate and equity risk premium used by analysts, managers of companies and finance and economics professors. For example, see Survey: market risk premium and risk-free rate used for 95 countries in 2022, Fernandez et al., 24 May 2022.  ~ Back to section

43 We used the filter on the italaw website ([https://www.italaw.com/](https://www.italaw.com/)) to identify all awards for which damages of more than US$100 million were recorded as at August 2022.  ~ Back to section

44 Some of these 11 awards combined the income approach with other approaches. For instance, in ICSID Case No. ARB/13/1, the tribunal relied on the income approach for some heads of claim and the cost approach for others. In the remaining three awards where it did not rely on an income approach, the tribunal instead used a market (comparable) approach, a cost approach and a combination of a market approach and a cost approach.  ~ Back to section

45 Based on our review, the tribunal relied on a standard DCF approach in the awards in the following 11 cases: SCC Case No. V 2014/163; ICC Case No. 20549/ASM/JPA(C-20550/ASM); ICSID Cases No. ARB(AF)/09/1, No. ARB/13/1, No. ARB/08/6, No. ARB/13/36, No. ARB/13/31, No. ARB/11/25, No. ARB/07/27 and No. ARB/15/44; and MCCI Case No. A-2013/29.  ~ Back to section

46 The *Tethyan v. Pakistan* award was not included in the results of our italaw search described above as its damages were not recorded on the italaw website.  ~ Back to section
The limited use of the certainty equivalent DCF relative to the standard DCF might also be related to the complexities involved in estimating certainty equivalent cash flows as discussed above. For instance, Professor Damodaran explains that estimating a discount rate using risk and return models such as CAPM is ‘a convenient way of adjusting for risk and it is no surprise that they are in the toolboxes of most analysts who deal with risky investments’. Regarding the estimation of certainty equivalent cash flows, he explains that the practical challenges of doing so remain ‘daunting’. Damodaran, ‘Risk adjusted value’, pp. 5 and 10.

[Karthik Balisagar](karthik.balisagar@fticonsulting.com)  
[Tim Battrick](tim.battrick@fticonsulting.com)

200 Aldersgate, Aldersgate Street, London EC1A 4HD, United Kingdom

Tel: +44 20 3727 1000

[https://www.fticonsulting.com/](https://www.fticonsulting.com/)

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