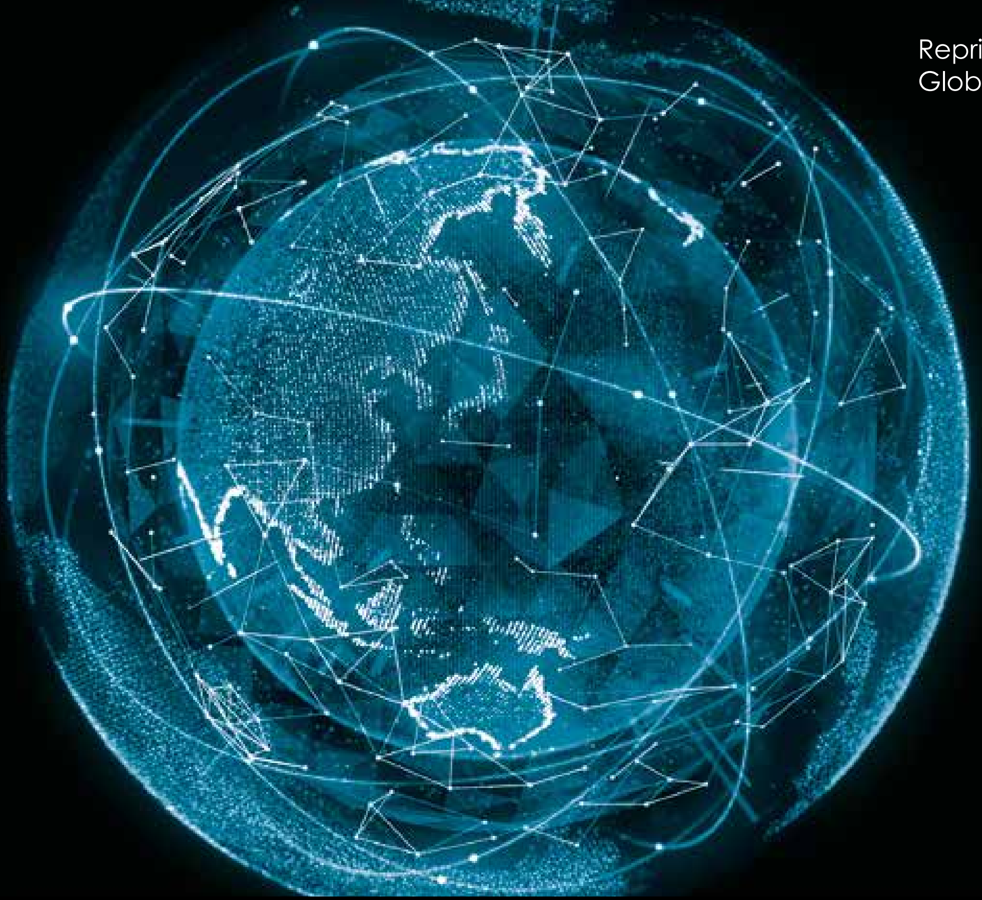

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Among the nuggets it contains:

- a description of how China has extended its reporting system – whereby lower courts must notify the Supreme People's Court before taking decisions that may affect awards or arbitrations – to include domestic cases;
- statistics showing a boom in arbitration in Vietnam, plus a review of the most recent cases on annulment and enforcement;
- a full review of all the significant court decisions from Indian in the past year;
- how Malaysia has made it easier for foreign counsel to appear in international arbitrations there; and
- remarkable statistics from Korea showing the growth of international cases at the Korean Commercial Arbitration Board and the extent of the government's development plans.

The review also looks to answer speculative questions facing arbitration in the Asia-Pacific. The retrospective on the Hong Kong International Arbitration Centre on the occasion of the HKIAC's 35th birthday answers 'will Hong Kong will be seen as neutral territory vis-à-vis the mainland in the future?', while 'DCF – gold standard or fool's gold?' questions how arbitrators might attempt to value Spotify Technology were it expropriated by Sweden.

If you have any suggestions for future editions, or want to take part in this annual project, my colleague and I would love to hear from you. Please write to insight@globalarbitrationreview.com.

David Samuels
Publisher
May 2019

DCF: Gold Standard or Fool's Gold?

Montek Mayal and Alex Davie
FTI Consulting

Introduction

In disputes in which the claimant has suffered substantial economic losses, for example the loss of a valuable business or of an ongoing stream of cash flows, questions arise as to how to quantify that loss. In investment treaty arbitration the appropriateness of the use of discounted cash flow (DCF) analysis as a basis for calculating such losses is often at issue.

DCF analysis is a widely adopted business valuation approach among investors, business managers and corporate finance professionals. However, tribunals in investment treaty disputes are sometimes reluctant to rely on it. Conversely, cost-based valuation methods are rarely used in valuation practice while tribunals frequently make awards of damages based on them.

In this article, we consider the usefulness of each of DCF analysis and cost-based approaches as valuation methods and as tools for quantifying losses. We then explore the reasons for the apparent divergence between the attitudes of tribunals and investors to the two approaches, recognising that this is at least in part a matter of law.

First, we consider the purpose of an award of damages. Second, we consider the concept of fair market value (FMV) and methods typically deployed to estimate it, focusing on DCF analysis and cost-based methods. Third, we consider how an investment treaty tribunal might consider damages for a hypothetical expropriation of Spotify Technology SA (Spotify), a large but currently unprofitable music-streaming service, and contrast this with the valuation of Spotify by investors implied by its share price. Fourth, we consider whether the certainty with which invested costs can typically be quantified is the reason tribunals often prefer to rely on them.

The purpose of an award of damages

It is useful first to consider the purpose of an award of damages. It is necessary to look to the relevant law to do so, but we make the following comments as experts in matters of valuation rather than the law.

In our experience, damages in investment treaty arbitration are often calculated by reference to the principle set out in the judgment in the *Chorzow Factory* case, wherein the Permanent Court of International Justice (PCIJ) stated that:[1]

> *Reparation must, as far as possible, wipe out all the consequences of the illegal act and re-establish the situation which would, in all probability, have existed if that act had not been committed. Restitution in kind, or, if this is not possible, payment of a sum corresponding to the value which a restitution in kind would bear; the award, if need be, of damages for loss sustained which would not be covered by the restitution in kind or payment in place of it – such are the principles which should serve to determine the amount of compensation due for an act contrary to international law.*

Damages are typically calculated by preparing a calculation of the financial position the claimant would have been in, but for the wrongful act of the respondent, and comparing that with the financial position the claimant actually is in, given the wrongful act. The monetary difference between the claimant's 'but for' and 'actual' financial positions will be the amount of money that re-establishes 'the situation which would, in all probability, have existed if that act had not been committed'.

Many treaty arbitration claims concern the expropriation of an asset. In that case, the corresponding framework for the damages calculation is straightforward. But for the expropriation, the claimant would have owned a potentially valuable business. Given the expropriation, it does not own the business. The difference between these two is the value of the business that has been expropriated.

The fair market value standard

What do we mean by 'value' in these circumstances? Many bilateral investment treaties (BITs) refer to 'fair market value' (FMV) as the appropriate measure of compensation for expropriation. For instance, the Singapore–Germany BIT states that, in the event of expropriation, there should be 'just and equitable compensation which represents the fair market value of the investment expropriated'.[2]

The treaties tend not to define FMV. FMV is a term that originates in the US tax system and is defined in somewhat different ways by different authorities, although the key features are common to many definitions. By way of example, the tribunal in *Bear Creek v Peru* defined FMV in a way consistent with the standard definitions as follows:[3]

> [T]*he price, expressed in terms of cash equivalents, at which property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arms-length in an open and unrestricted market, when neither is under compulsion to buy or sell and when both have reasonable knowledge of the relevant facts.*

The important features of FMV that are common to most definitions, including those adopted by tribunals in investment treaty arbitration, are the following.

- FMV is the price paid in a transaction between hypothetical buyer and seller. This means that the particular circumstances of the actual owner of the asset are not reflected in the valuation. For example, a business may be particularly valuable to its current owner due to synergies only that owner can derive. The incremental value of those synergies is not reflected under the FMV standard.
- FMV is the price paid in a hypothetical transaction, assuming that the asset had been properly marketed and that the parties to the transaction are well informed. For example, it is not appropriate to discount a FMV valuation to reflect a forced sale.

We note in passing that under most BITs, FMV is the relevant measure of compensation in the event of legal expropriation.[4] Many investment treaty claims concern illegal expropriation, for which the relevant standard of value is not defined in the BIT. In those circumstances, parties often refer back to the *Chorzow Factory* principle.

It is possible that the amount of money required to put the claimant in the position it would have been in but for an expropriation is different from the FMV of the expropriated asset. For example, an asset may have value to the claimant that others in the market would not be able to access, such as synergies, and so are not be reflected in FMV. This means there are circumstances in which the amount of damages appropriate under the *Chorzow Factory* principle will be different from the FMV of the business.

It is not uncontroversial that FMV is the appropriate standard of value in investment treaty disputes and the correct standard is a matter of law.[5] However, for the purposes of this article we assume it is the relevant measure.

Valuation methods in practice

In investment treaty arbitration, the following groups of valuation methods are often used to value businesses:

- income methods, such as DCF analysis, under which projections are made of the stream of cash flows a business will generate. That stream of cash flows is then discounted back to the valuation date at an appropriate rate;
- market methods, under which prices paid in transactions in businesses similar to the subject of the valuation are used to determine its value;[6] and
- cost-based methods, under which the value of the subject asset is determined by reference to its cost.[7]

The value of a cash-generating asset essentially depends upon expectations about the size and timing of its cash flows in the future and the relevant risk those cash flows are exposed to. The appropriate valuation method in any particular circumstance will depend on considerations such as the nature of the asset and availability of relevant information.

In the remainder of this article, we focus on the relative appropriateness of DCF and cost-based valuation methods, which is often a source of dispute in investment treaty arbitration. As we explain further below, in our view, there is sometimes divergence between the views of tribunals in investment arbitration as to the usefulness of the DCF method and the views of those undertaking valuation practice outside the disputes arena.

DCF in practice

Under DCF analysis:

- a central estimate of the cash flows a business will generate over some explicit forecast period is prepared, which should take into account the growth opportunities and risks to which the business is exposed. Typically, some assumption is then made as to how those cash flows will grow after the explicit forecast period into perpetuity; and
- those expected future cash flows are discounted back to the valuation date, reflecting that a dollar in a year's time is worth less than a dollar today, due to the time value of money (one could invest the dollar today over the next year and earn a return on it) and risk (uncertainty around the amount that the investor will ultimately receive; that is, the amount actually received could be more or less than a dollar). Typically, cash flows are discounted at the business's opportunity cost of capital which should reflect the relevant risk in those cash flows.

This means that DCF analysis can, in principle, be applied to any cash-generating asset for which it is possible to prepare a cash flow projection. Cash flow projections can be adjusted to take into account all of the relevant characteristics and circumstances of the business. It is this flexibility that explains its common adoption in valuation practice. The broad adoption of DCF analysis is illustrated by a 2014 survey of European valuation practitioners which showed that almost 80 per cent used DCF analysis in business valuation.[8]

This flexibility extends as far as early stage businesses for which market valuation approaches are difficult to apply. Professor Aswath Damodaran of New York University's Stern School of Business, who is often cited by valuation experts and tribunals in investment treaty disputes, argues that 'Discounted cash flow models can be used to value [young or start-up] firms'.[9] The widely read valuation textbook *Valuation: Measuring and Managing the Value of Companies* by McKinsey states 'The best way to value high growth companies is with a classic DCF valuation. . .'.[10]

Perhaps the main drawback of DCF analysis is its sensitivity to uncertain inputs. To prepare a projection of a business's cash flows, it is necessary to make numerous explicit assumptions about the future of that business and the markets it operates in. For example, it is necessary to form a view as to the rate at which cash flows will grow after the explicit forecast period, typically five to 10 years after the valuation date. Anyone who has been involved in making budgets for their own practice can attest to the difficulties of forecasting accurately the financial performance of their own business over the next 12 months. Making a reasonable assumption as to growth after five years' time is commensurately more difficult. Nonetheless, the results of a DCF valuation are often sensitive to the assumption as to terminal growth.

That uncertainty of appropriate inputs is compounded in the case of early stage businesses where there is no track record of steady historical cash flow generation which can be used to calibrate projections of future cash flow.

In our view, the fact that DCF analysis of an early stage business can give rise to a range of outputs from a reasonable range of input assumptions does not undermine the case for seeking to undertake DCF analysis where the information allows. Rather, it demonstrates that the value of an early stage business is inherently somewhat uncertain. In our view, it is generally preferable to perform DCF analysis and to compare its results to those of other valuation methods or to other evidence of value than to ignore it altogether.

Put another way, the fact that the results of DCF analysis are sensitive to uncertain inputs simply reflects that the value of a business is sensitive to uncertain future events. This can be demonstrated by looking at the extent to which the share prices of even large, well-established businesses operating in stable markets can vary – sometimes substantially – over short periods of time.

Cost-based valuation methods

There are circumstances in which the cost of an asset is a useful guide to its value. Cost-based valuation methods proceed from the intuitive proposition that someone would not pay more for something than it would cost them to build it themselves. If you were to buy a loaf of bread, it would be counter-intuitive to argue that the value of that loaf of bread immediately afterwards was anything other than the amount you just paid for it.

But the following day, that loaf of bread will be less fresh and its value may have declined. Alternatively, the baker's oven may break, resulting in a local bread shortage and its value may rise. The bread may be served in a restaurant and sold on to a customer at a substantial mark-up to its cost. Or perhaps it will turn out that the bread was contaminated in the baking and it is now known to be inedible and worthless.

When considering the value of a business, or the value of a business asset, similar principles apply, although the analysis becomes more complicated. If an investor acquired an empty factory, then the day after the acquisition the amount paid for the asset is likely to be a good guide to its value.[11] A year later its value may have changed – the investor may have installed machinery allowing the production of goods the investor has established a market for, causing its value to rise. Alternatively, the value of the factory may have fallen due to changes in the local market for industrial property. Or, in breach of the representations and warranties in the sale and purchase agreement, the factory may turn out to have been built on contaminated land causing it to require to be abandoned and the factory to have no value.

Cost can therefore be a helpful indicator of value in circumstances where there have been limited changes either to the asset in question since it was acquired or in the market for the asset. In practice, those circumstances do not always arise and so cost is often not the most appropriate valuation methodology.

To put it in the terms of the FMV definition we cite above, a hypothetical buyer will focus on the value of the economic benefits they expect to arise from acquiring an asset. In many circumstances, the initial cost of that asset will not be a good guide to the value of those economic benefits. Consider an unexplored oil field purchased for US$1 million five years ago. In the intervening five years, the oil price has doubled and petroleum engineers have established there are good prospects for the production of substantial quantities of oil from the field. A hypothetical buyer will likely focus on the quantity of the oil they can now expect to extract from the field and the price they can sell it at given oil price expectations today. The cost of that oil field five years ago is unlikely to be a good measure of its value today.

That is not to say cost should be ignored in valuation: if DCF analysis suggests a substantially different conclusion on the value of an asset to the amount that asset cost, the valuer should seek to understand whether there are good reasons for the divergence to exist, where the circumstances and available information allow. Having done so, the valuer should amend their valuation analysis if necessary.

DCF and cost in investment arbitration

In our experience, DCF is relied on proportionately less by investment arbitration tribunals than in typical business valuation practice, and cost-based methods are relied on more. This is illustrated by PwC's analysis of arbitration awards, principally those relating to investment treaty disputes, which showed that in the period 1990 to 2017, tribunals used DCF as their primary approach to the quantification of damages in approximately 40 per cent of published awards and historical cost or wasted costs in around 32 per cent.[12] According to PwC, the rejection of the DCF methodology has largely been in the cases where the tribunal 'considered the result to be too uncertain or speculative'.[13] These figures are in contrast to the prevalence of the two methods in valuation practice described above.

Tribunals appear to be particularly reluctant to rely on DCF analysis when the subject of the valuation has no history of operating profitably. In *Metalclad v Mexico*, in which the damages were to be assessed based on the FMV of a landfill operation, the tribunal rejected the use of the DCF methodology:[14]

- *Normally, the fair market value of a going concern which has a history of profitable operation may be based on an estimate of future profits subject to a discounted cash flow analysis.*
- *However, where the enterprise has not operated for a sufficiently long time to establish a performance record or where it has failed to make a profit, future profits cannot be used to determine going concern or fair market value . . . .*

Similarly, in *Bear Creek v Peru*, the tribunal noted that 'there was no evidence to support a track record of successful operation or profitability in the future' and concluded that the project 'remained too speculative and uncertain to allow [the DCF] method to be utilised'. The tribunal in *Franck Charles Arif v Moldova* stated that 'the DCF methodology is not appropriate for a business that never operated and where a satisfactory basis for its projected revenues has not been demonstrated. Use of a DCF methodology in these circumstances gives an excessively speculative outcome.'[15] The tribunal in *Rusoro v Venezuela* laid out a list of criteria that must be fulfilled for DCF analysis to be appropriate, including that 'the enterprise has an established historical record of financial performance'.[16]

In summary, tribunals in investment arbitration appear to be somewhat more reluctant to rely on DCF analysis than do investors and corporate finance professionals. Tribunals appear to be particularly reluctant to do so when the investment in question has no track record of profitability.

Spotify: an illustration of the divergence between FMV and invested costs for a business with no track record of profitability

Spotify is a well-known music-streaming service based in Stockholm but which operates globally. It is fast-growing but currently makes substantial losses and has never made a profit at the level of earnings before interest, tax, depreciation and amortisation (EBITDA; a measure of profits commonly used in valuation) since starting operations in 2008.[17] At the date of writing this article, equity analysts covering Spotify do not expect it to earn positive EBITDA before 2021. There are debates as to the extent to which consumers will be prepared to subscribe to music streaming services and the amount they will pay, causing substantial uncertainty as to the revenue and profits Spotify will ultimately be able to achieve.

Consider, for the purposes of considering the relevant valuation issues only, a thought experiment in which the Swedish government decided to expropriate Spotify and foreign Spotify shareholders were to bring a claim under one of Sweden's BITs. As we explain above, a number of investment treaty tribunals appear to have adopted a principle under which the appropriate measure of damages is wasted costs in circumstances in which a business does not have a track record of operating profitably.

A hypothetical tribunal considering Spotify might therefore look to the costs invested in Spotify. According to the website Dealroom, Spotify has raised around US$2.6 billion from investors since its inception.[18]

However, Spotify's shares happen to be listed on the New York Stock Exchange (NYSE). Transactions in shares on the NYSE are likely to be substantially similar to the hypothetical transaction envisaged under the FMV standard we outline above. That means it is likely that the price those shares currently trade at is a reasonable representation of their FMV at any particular point in time. On 26 March 2019, Spotify's shares traded at US$138.02, implying a valuation of 100 per cent of the equity of Spotify of US$25.7 billion.[19]

The price of Spotify's shares on the NYSE is set by investors buying and selling those shares. How do investors form their views as to the value of those shares? A review of investment research on Spotify, published by equity analysts, suggests that investors do indeed rely on DCF to value it, among other valuation methods.

This means that a tribunal that adopted the principles as to the appropriateness of DCF summarised above and had decided to make an award of damages by reference to invested costs instead, would award 11 per cent of what is, effectively, the directly observable FMV of the asset subject to expropriation.

In practice, of course, a tribunal seeking to determine the FMV of Spotify would be unlikely to ignore its listed share price.[20] However, businesses like Spotify exist that do not happen to be listed and indeed shares in Spotify itself were only listed on the NYSE in 2018. The example of Spotify therefore illustrates that invested cost can substantially underestimate the FMV of businesses, including those which have yet to generate a track record of profitability and whose financial outlook is substantially uncertain.

We note that a number of large technology businesses have been listed on stock exchanges or have raised money at substantial valuations in the US recently. If this trend continues, the issue of divergence between value and invested cost of loss-making businesses may increase in relevance, particularly if such businesses become the subject of investment treaty disputes.

DCF, cost and certainty

As we understand it, under English law a claimant can choose to claim damages for a breach of contract as an 'expectation loss' or a 'reliance loss'.[21] Similar provisions exist under other forms of common law. An expectation loss award of damages should put the claimant in the position it would have been in but for the breach of contract – effectively it should do the same job as an award of damages under the *Chorzow Factory* principle, as we understand it.

However, English law recognises that in certain circumstances an expectation loss will be difficult to establish or prove. For the same reasons that a DCF can give rise to a broad range of results, an expectation loss calculation may depend on assumptions about uncertain variables.

In those circumstances, a claimant can elect to make a 'reliance loss' claim, under which it claims the costs wasted in reliance on the contract, rather than the profits it would have earned but for the breach. As *McGregor on Damages* puts it, in a reliance loss claim, 'a claimant is claiming not to be put into the position he would have been in had the contract been performed, but to be put into the position he would have been in had it never been made'.[22]

Similarly, it is sometimes argued in investment treaty disputes that the appropriate measure of damages should be *damnum emergens*, or sunk investment costs, rather than the FMV of the asset expropriated.[23]

As we explain above, Professor Damodaran is an advocate of the use of DCF to value early stage businesses, in contrast to the approach often adopted by tribunals. However, Professor Damodaran recognises that the results of DCF analysis for early stage businesses will be uncertain – although that uncertainty is inherent in the early-stage business rather than just DCF analysis as a valuation technique:

> *It should be noted again that the question is not whether* [currently loss-making early-stage businesses] *can be valued – they certainly can – but whether we are willing to live with noisy estimates of value . . . much of this noise stems from real uncertainty about the future.*

This 'noise' is again illustrated by Spotify. On 7 February 2019, equity analysts at Morgan Stanley published research which valued shares in Spotify at US$170, based in part on DCF analysis. However, they also prepared a 'bear case' valuation, in which they made less optimistic assumptions about Spotify's future progression, of US$80, and a 'bull case' valuation with more optimistic underlying assumptions of US$275.[24] The range of potential outcomes of DCF analysis for Spotify is wide.

We sympathise with tribunals given the task of making awards of damages in relation to early-stage businesses where future prospects, and so value, are uncertain. In investment treaty arbitration this uncertainty is sometimes compounded due to the location of the relevant investment in a developing country. The attraction of awarding damages by reference to wasted costs which can usually be measured reliably is clear. It may be that the prevalence of cost-based damages awards in investment treaty arbitration arises because tribunals are not 'willing to live with noisy estimates of value'.

However, as we explain above, cost might not be a good guide to FMV. An award of damages made by reference to wasted costs allows the tribunal to put the claimant in the position it would have been in had it never made the investment in question with some certainty. It is less clear that such an award puts the claimant in the position it would have been in but for the expropriation of that investment with any more certainty than DCF analysis allows.

In our view as valuation experts, it may be helpful for parties to have in mind the distinction between the following arguments that damages should be awarded by reference to invested costs:

- an argument that FMV is the correct measure of damages, and that cost is the appropriate measure of FMV;[25] and
- an argument that invested costs is the correct measure of damages.

Under the first argument, the question of the appropriateness of cost as a measure of FMV is a matter of valuation judgment. Under the second, the appropriateness of cost as a measure of damages is largely a matter of law.

Conclusions

DCF is a versatile valuation tool that can, in principle, be used to value any cash generating asset. It is widely deployed in practice. However, uncertainty as to the appropriate input assumptions gives rise to uncertainty in the results of DCF analysis. As we understand it, it is generally for the claimant to prove its loss and there are circumstances in which investment treaty tribunals have considered that the results of DCF analysis are not sufficiently certain for claimants to reach the appropriate evidential threshold to do so.

Invested costs are sometimes a poor guide to FMV. When considering the appropriateness of cost as a measure of FMV, valuers should consider the characteristics and circumstances of the asset in question, how those characteristics and circumstances have changed since acquisition and how the market for the asset has changed since acquisition.

There is a separate legal question as to whether FMV or invested costs should be the appropriate measure of damages on which we offer no opinion. However, practically speaking, it is helpful to have the answer to this question in mind before embarking on a damages calculation.

In our view, it is best practice to seek all available valuation evidence in relation to an asset. Depending on the asset, the circumstances and the information available, that evidence may include DCF analysis, cost, market valuation evidence and evidence arising from transactions in the subject matter of the valuation itself. Having done so, the valuer should seek to arrive at valuation conclusions that are consistent with the evidence.

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The views expressed in this article are those of the authors and not necessarily the views of FTI Consulting, its management, its subsidiaries, its affiliates or its other professionals.

Notes

1 *The Chorzów Factory Case Germany v Poland*, 13 September 1928, PCIJ, Series A No. 17 (substantive issue), paragraph 125.

2 Bilateral investment treaty between the Federal Republic of Germany and Singapore, dated 3 October 1973: article 4 (1).

3 *Bear Creek Mining Corporation v Republic of Peru*, ICSID Case No. ARB/14/21, Award, 30 November 2017, paragraph 597. The definition can be found at H E Johnson, 'Business Valuation', 2012, p 34.

4 S H Nikièma, 'Compensation for Expropriation – Best Practices Series - March 2013', International Institute for Sustainable Development, 2013, pp 9 and 10.

5 Mark Kantor notes that 'Market value is the dominant valuation principle for assessing injuries to businesses. In the context of investment treaty disputes, however, fair market value measures have been rejected in a number of cases in favour of compensation based on sunk investment costs'. *Kantor: Valuation for Arbitration*, p 50.

6 Or sometimes transactions in the subject asset itself.

7 We distinguish here between 'cost-based' valuation methods, under which the value of an asset is measured simply by reference to the cost of acquiring or constructing it, and other asset-based valuations that can be more sophisticated and take into account the market or replacement value of the underlying assets rather than simply their cost. We confine this article to a consideration of 'cost-based' valuation methods. Our colleagues Mark Bezant and David Rogers contributed a useful chapter to *GAR*'s *The Guide to Damages in International Arbitration* titled 'Asset-Based Approach and Other Valuation Methodologies', which considers other forms of asset-based valuations in more detail.

8 Bancel and Mittoo: 'The Gap between Theory and Practice of Firm Valuation: Survey of European Valuation Experts', 2014. The results are from a survey of 'valuation experts across 10 European countries with CFA or equivalent designation'. The participants included portfolio managers (23 per cent), financial analysts (22 per cent), investment bankers (19 per cent) and valuation practitioners (16 per cent).

9 *Investment Valuation*, 2nd ed, Aswath Damodaran, p 638.

10 T Koller, M Goedhart and D Wessels, *Measuring and Managing the Value of Companies*, 4th edition, 2005, p 655.

11 The terms and context of any particular transaction may have a bearing on whether the transaction price is representative of FMV, even ignoring the passage of time. For example, a transaction price agreed between related parties may differ from the price an unrelated party would be prepared to pay for an asset. However, information about detailed transaction terms is not always available.

12 PwC, 'International Arbitration damages research 2017 update', December 2017, p 6.

13 PwC, 'International Arbitration damages research 2017 update', December 2017, p 6.

14 *Metalclad Corporation v The United Mexican States*, ICSID Case No. ARB(AF)/97/1, Award, 30 August 2000, paragraphs 119–122.

15 *Mr Franck Charles Arif v Republic of Moldova*, ICSID Case No. ARB/11/23, Award, 8 April 2013, paragraph 576.

16 *Rusoro Mining Limited v The Bolivarian Republic of Venezuela*, ICSID Case No. ARB(AF)/12/5, Award, 22 August 2016, paragraph 759.

17 *Fortune*, 'Spotify Trounces Apple Music in Competition for Streaming Music Service Paid Subscribers', 6 February 2019.

18 US$1.0 billion of the amount raised by Spotify is in the form of debt, which it may be appropriate to ignore for the purposes of establishing wasted investment costs, leaving US$1.6 billion of equity invested.

19 In practice, it may not be reasonable to infer the value of 100 per cent of the equity of Spotify in proportion to the prices at which small packets of shares trade on the NYSE due to, for example, differences in liquidity and control.

20 For example, the tribunal in *Rusoro v Venezuela* considered Rusoro's share price when determining its value (Source: *Rusoro Mining Limited v The Bolivarian Republic of Venezuela*, ICSID Case No. ARB(AF)/12/5, Award, 22 August 2016, paragraphs 708 to 714, 767, 777 to 780).

21 *McGregor on Damages*, 20th ed, 4-025.

22 *McGregor on Damages*, 20th ed, 4-025.

23 *Kantor: Valuation for Arbitration*, p 50.

24 Morgan Stanley: Leaning Into Content– Reiterate OW; 7 February 2019.

25 For example, in *Bear Creek v Peru*, the parties and tribunal agreed that FMV was the relevant measure of damages and the tribunal made an award of damages by reference to invested costs. (Source: *Bear Creek Mining Corporation v Republic of Peru*, ICSID Case No. ARB/14/21, Award, 30 November 2017, paragraph 596, 604)

Montek Mayal
FTI Consulting

Montek Mayal is a senior managing director in FTI's economic and financial consulting practice in India. Montek founded and now leads FTI's economic consulting practice in India. Montek joined FTI in November 2009 as a research analyst.

Montek's primary area of focus is in the assessment of quantum, financial, economic and valuation issues in contentious and non-contentious matters. He has a broad range of experience in issues including valuation of businesses and shares, calculation of lost profits, spectrum auctions and market and economic analysis, research and study. He has developed and designed a number of quantitative models to value and forecast different aspects of businesses.

His industry experience encompasses telecommunications, media, oil and gas, financial services, industrial gases, travel, consumer and branded goods, petrochemicals, diversified and industrial materials and aviation.

Montek has acted as or is currently acting as sole or joint expert for separate parties in domestic and international arbitrations and in competition matters in India. Montek was listed in the *Who's Who Legal 2016*, *2017* and *2018* Consulting Experts guides in the field of 'Quantum of Damages'.

Montek has also advised leading telecommunication and cable operators on bidding strategy and provided support on issues concerning game theory, auction design and rules and bidding behaviour in major telecommunications auctions, globally.

Alex Davie
FTI Consulting

Alex is a managing director in the economic and financial consulting practice of FTI Consulting. He is a chartered accountant. Alex joined the practice in 2011 and has 10 years of experience providing financial advice in the context of disputes.

Alex's practice has focused on the provision of expert financial advice in the context of international arbitration and litigation. Typically, this involves the quantification of lost profits, assessments of wasted costs, business or intellectual property valuation, or advice relating to accounting matters.

Alex has been appointed as expert or has led the preparation of expert reports in proceedings before the English High Court, US courts, arbitral forums including tribunals under the rules of the International Chamber of Commerce and the London Court of International Arbitration, and in bilateral investment treaty cases.

Alex also has experience of valuation work in non-contentious circumstances, including in the context of corporate restructuring or transactions.

Alex is named in the *Who's Who Legal Arbitration: Future Leaders – Expert Witnesses 2019* list. According to *Who's Who Legal*, Alex presents 'high-quality, carefully reasoned and well-drafted analyses' and 'his work has always been thorough and he provides confidence that nothing has been missed'.

Alex has particular experience in the leisure and hospitality, technology and energy industries.

Alex regularly presents on damages and valuation issues to disputes lawyers.

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FTI Consulting, Inc is a global business advisory firm dedicated to helping organisations protect and enhance enterprise value in an increasingly complex legal, regulatory and economic environment. FTI Consulting professionals, who are located in all major business centres throughout the world, work closely with clients to anticipate, illuminate and overcome complex business challenges in areas such as investigations, litigation, mergers and acquisitions, regulatory issues, reputation management and restructuring. The FTI Consulting economic and financial consulting practice provides detailed damages and valuation calculations for arbitration or litigation. Our work is based on economic, accounting and finance evidence, that we analyse in order to quantify the financial effects of the alleged actions of the parties. Our reports are prepared in a fashion that is easily understood by judges and arbitrators. From 2013 to 30 September 2018, our senior experts have submitted more than 1,400 expert reports and have collectively testified more than 425 times.

Our testifying experts have significant experience in delivering clear and concise opinion evidence in arbitral and judicial hearings. We have extensive industry experience in oil and gas, electric power, pharmaceuticals, healthcare, telecommunications, media and entertainment, transportation, financial services, transfer pricing, intellectual property and mining and extractive industries. *Who's Who Legal*'s 2019 survey of leading expert witnesses in commercial arbitration identified that FTI has maintained its position as the pre-eminent firm globally, with 53 of experts listed coming from FTI (or its subsidiary, Compass Lexecon) – more than four times the next listed consulting firm.

More information can be found at www.fticonsulting.com.

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