

Global Arbitration Review

# The Guide to Damages in International Arbitration

---

Editor  
John A Trenor

Fourth Edition

# The Guide to Damages in International Arbitration

Fourth Edition

Editor

John A Trenor

Reproduced with permission from Law Business Research Ltd

This article was first published in January 2021

For further information please contact [Natalie.Clarke@lbresearch.com](mailto:Natalie.Clarke@lbresearch.com)



**Publisher**

David Samuels

**Account Managers**

Marta Jurkowska and Samuel Romp

**Editorial Coordinator**

Gavin Jordan

**Production Operations Director**

Adam Myers

**Head of Content Production**

Simon Busby

**Copy-editor**

Caroline Fewkes

**Proofreader**

Emily Casswell

Published in the United Kingdom

by Law Business Research Ltd, London

Meridian House, 34-35 Farringdon Street, London, EC4A 4HL, UK

© 2020 Law Business Research Ltd

[www.globalarbitrationreview.com](http://www.globalarbitrationreview.com)

No photocopying: copyright licences do not apply.

The information provided in this publication is general and may not apply in a specific situation, nor does it necessarily represent the views of authors' firms or their clients. Legal advice should always be sought before taking any legal action based on the information provided. The publishers accept no responsibility for any acts or omissions contained herein. Although the information provided was accurate as at November 2020, be advised that this is a developing area.

Enquiries concerning reproduction should be sent to Law Business Research, at the address above. Enquiries concerning editorial content should be directed to the Publisher – [David.Samuels@lbresearch.com](mailto:David.Samuels@lbresearch.com)

ISBN 978-1-83862-212-1

Printed in Great Britain by  
Encompass Print Solutions, Derbyshire  
Tel: 0844 2480 112

# Acknowledgements

The publisher acknowledges and thanks the following for their learned assistance throughout the preparation of this book:

ALIXPARTNERS

A&M GMBH WIRTSCHAFTSPRÜFUNGSGESELLSCHAFT

BDO LLP

BERKELEY RESEARCH GROUP

CEG EUROPE

CET GROUP OF COMPANIES

CHARLES RIVER ASSOCIATES

CORNERSTONE RESEARCH

FRONTIER ECONOMICS LTD

FTI CONSULTING

HABERMAN ILETT UK LTD

HOMBURGER

KING & SPALDING LLP

LONDON BUSINESS SCHOOL

MCDERMOTT WILL & EMERY UK LLP

NERA ECONOMIC CONSULTING

ONE ESSEX COURT

ORRICK HERRINGTON & SUTCLIFFE LLP

OXERA CONSULTING LLP

SECRETARIAT

THE BRATTLE GROUP

THREE CROWNS LLP

VICTORIA UNIVERSITY, FACULTY OF LAW

WHITE & CASE LLP

WILMER CUTLER PICKERING HALE AND DORR LLP

WÖSS & PARTNERS

# Contents

Preface .....	vii
Introduction .....	1
<i>John A Trenor</i>	

## **Part I: Legal Principles Applicable to the Award of Damages**

1	Compensatory Damages Principles in Civil and Common Law Jurisdictions: Requirements, Underlying Principles and Limits.....	7
	<i>Clare Connellan, Elizabeth Oger-Gross and Angélica André</i>	
2	Non-Compensatory Damages in Civil and Common Law Jurisdictions: Requirements and Underlying Principles.....	26
	<i>Reza Mohtashami QC, Romilly Holland and Farouk El-Hosseny</i>	
3	Damages Principles under the Convention on Contracts for the International Sale of Goods .....	45
	<i>Petra Butler</i>	
4	Contractual Limitations on Damages.....	81
	<i>Gabrielle Nater-Bass and Stefanie Pfisterer</i>	
5	Overview of Principles Reducing Damages .....	94
	<i>Craig Miles and David Weiss</i>	
6	Full Compensation, Full Reparation and the But-For Premise.....	107
	<i>Herfried Wöss and Adriana San Román</i>	

## **Part II: Procedural Issues and the Use of Damages Experts**

- 7 The Function and Role of Damages Experts..... 119  
*Richard Boulton QC and Nikola Stambolić*
- 8 Strategic Issues in Employing and Deploying Damages Experts ..... 127  
*John A Trenor*

## **Part III: Approaches and Methods for the Assessment and Quantification of Damages**

- 9 Overview of Damages and Accounting Basics ..... 151  
*Gervase MacGregor, Susan Blower and David Mitchell*
- 10 Assessing Damages for Breach of Contract..... 162  
*Karthik Balisagar and Tim Battrick*
- 11 Overview of Methodologies for Assessing Fair Market Value ..... 171  
*Philip Haberman and Liz Perks*
- 12 The Applicable Valuation Approach ..... 182  
*Santiago Dellepiane, Andrea Cardani and Julian Honowitz*
- 13 Income Approach and the Discounted Cash Flow Methodology ..... 191  
*Alexander Demuth*
- 14 Best Practices and Issues that Arise in DCF Models ..... 216  
*Gervase MacGregor and Michael Smith*
- 15 Early-Stage Investments and the ‘Modern’ DCF Method ..... 230  
*Tunde Oyewole, Sarah Stockley and Charles Adams*
- 16 Determining the Weighted Average Cost of Capital ..... 238  
*Charles Jonscher*
- 17 Market or Comparables Approach ..... 248  
*Richard Hern, Zuzana Janeckova, Yue (Jim) Yin and Konstantinos Bivolaris*

18	Accounting-Based Valuation Approach .....	261
	<i>M Alexis Maniatis, Fabricio Nunez, Ilinca Popescu and Jack Storzaker</i>	
19	Country Risk .....	277
	<i>Tiago Duarte-Silva</i>	
20	Taxation and Currency Issues in Damages Awards .....	287
	<i>James Nicholson and Toni Dyson</i>	
21	Pre-Award Interest .....	299
	<i>James Dow</i>	
22	The Use of Econometric and Statistical Analysis in Damages Assessments .....	313
	<i>Ronnie Barnes</i>	
23	How to Quantify Damages in Covid-19 Related Disputes .....	331
	<i>Min Shi, Mohammed Khalil and Shreya Gupta</i>	
24	Costs .....	341
	<i>Joseph R Profaizer, Igor V Timofeyev, Samuel W Cooper, Adam J Weiss</i>	

#### **Part IV: Industry-Specific Damages Issues**

25	Damages in Oil and Gas and Mining Arbitrations .....	364
	<i>Darrell Chodorow and Florin Dorobantu</i>	
26	Damages in Gas and Electricity Arbitrations .....	381
	<i>Wynne Jones, Christoph Riechmann and Stefan Lochner</i>	
27	Damages in Construction Arbitrations .....	392
	<i>Michael W Kling and Thomas A Gaines</i>	
28	Damages in Financial Services Arbitration .....	409
	<i>Erin B McHugh and Robert Patton</i>	
29	Damages in Life Sciences Arbitrations .....	424
	<i>Gregory K Bell, Andrew Tepperman and Justin K Ho</i>	

Contents

30	M&A and Shareholder Arbitrations .....	435
	<i>Kai F Schumacher, Michael Wabnitz and Greig Taylor</i>	
31	Damages in Intellectual Property Arbitrations.....	447
	<i>Trevor Cook</i>	
32	Assessing Damages in Antitrust Actions.....	457
	<i>Ewa Mendys-Kamphorst</i>	
	Appendix 1: About the Authors.....	468
	Appendix 2: Contributors' Contact Details.....	494
	Index.....	500

# Preface

This fourth edition of Global Arbitration Review's *The Guide to Damages in International Arbitration* builds on the successful reception of the earlier editions. As explained in the introduction, this book 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 fourth edition incorporates updated chapters from various authors and contributions from new authors, including a chapter on damages issues in light of covid-19. This fourth 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.

**John A Trenor**

Wilmer Cutler Pickering Hale and Dorr LLP

November 2020

# Part III

---

Approaches and Methods for the Assessment  
and Quantification of Damages

# 18

## Accounting-Based Valuation Approach

**M Alexis Maniatis, Fabricio Nunez, Ilinca Popescu and Jack Stirzaker<sup>1</sup>**

The standard for most valuations in the context of international arbitration is fair market value (FMV). Where FMV can be observed directly, it is often the starting point. Because the value of assets derives from the future cash flows they provide to the owner, discounted cash flow is a primary method when estimates of future cash flows are reliable. When the asset is not traded, but reasonable benchmark assets are traded or can be purchased, they can be used to estimate or to infer the market value of the subject assets with corresponding adjustments.

What happens when none of these methods is available? In those cases, the best approach may be to use accounting-based measures of asset value. This does not, of course, mean simply assuming that the value of an asset recorded in the accounts represents its market value. That is unlikely. Rather the accounting-based asset value (AAV) provides a starting point. Estimating market value requires an understanding of the accounting standards under which the asset was recorded and adjustments to reflect, among other things, the difference between economic and accounting depreciation, the evolution (favourable or unfavourable) of important risks, the effects of competition, and the macroeconomic environment (interest rates, inflation, exchange rates, economic growth prospects). These factors make the application of AAV challenging, but they must be considered to infer reasonable market values.

This chapter explores situations when AAV may be appropriate and raises issues that may affect the interpretation of accounting values in the search for market value in those cases where other methods cannot be applied. We also consider certain special cases: debt as well as assets that are regulated on the basis of accounting values.

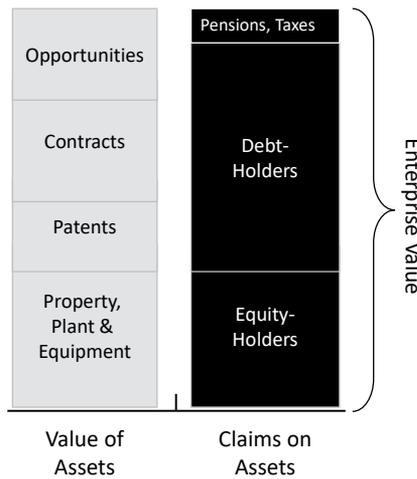
---

<sup>1</sup> M Alexis Maniatis and Jack Stirzaker are principals and Fabricio Nunez and Ilinca Popescu are senior associates at The Brattle Group.

## Background

The first step in a valuation exercise is to determine what is being valued. When a valuation is required in an arbitration, it typically will concern either an asset or a liability of an investor or a corporation, or the company itself. As Figure 1 illustrates, this can include the valuation of specific assets (such as a plant, a contract or a patent), or specific claims over a company's assets (e.g., equity versus debt); or all assets of a business (known as the enterprise value). It is also possible to value a specific conduct (such as the effects of illegal anti-competitive practices), or a specific opportunity (e.g., the loss of ability to launch a new product or venture), or legal rights (such as intellectual property rights).

Figure 1: The object of valuation



In most cases, the assets or liabilities being valued will correspond to some set of accounting entries in financial statements of the relevant entities.<sup>2</sup> Financial statements provide information to a wide range of users about a company's financial position and performance at a point in time. Of course, the frequency with which financial statements are released affects the reliability and usefulness of accounting data. More importantly, companies prepare financial statements complying with specific accounting standards and at regular intervals usually required by regulation.<sup>3</sup> Complying with accounting standards is essential in that it provides a common language that all companies use in their reporting, which allows users to make comparisons between companies. However, rules imposed by the accounting standards limit the scope and usefulness of the information contained in the financial statements for valuation purposes, where the focus is forward-looking (i.e., based on future cash generating potential) and market-based. For arbitration purposes, the frequency with which financial statements are released affects the reliability and usefulness of accounting data.

<sup>2</sup> Importantly, as we explain below, some assets and liabilities are not reported in the financial statements.

<sup>3</sup> The two main sets of accounting standards for financial reporting are the International Financial Reporting Standards [IFRS] and the Generally Accepted Accounting Principles [GAAP]. Many national accounting systems use IFRS, a major exception being the United States, where the GAAP still apply. There is an ongoing effort by the bodies supporting the two systems to reduce or eliminate the differences between the two systems.

In the rest of the chapter, we discuss the AAV method in which the information in the financial accounts is used to determine value. We describe the most common rules used in financial accounts and the adjustments accounting entries typically require to estimate forward-looking, market-based value. Finally, we highlight two examples, debt and regulated industries, for which information in the financial accounts can provide more straightforward guidance on estimating value.

## Fundamental principles of valuation

Before turning to the question of when the AAV method is most useful, we review some basic principles in valuation relevant to the notion of market value of an asset.

Market value, or FMV, is the most commonly applied valuation standard in international arbitration. FMV is defined as:

*the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.*<sup>4</sup>

A fundamental principle of financial economics is that the market value of any asset is determined by its ability to generate future cash flows to the owner. Therefore, a valuation amounts to the market value today of the right to receive those future cash flows. All valuation methods attempt to measure market value either directly or indirectly. When a valuer can reliably forecast cash flows and the relevant risks can be properly assessed, an income-based approach, such as the discounted cash flow (DCF) method, is typically the primary valuation approach.<sup>5</sup> In the DCF method, the valuer projects explicitly an asset's cash flows into the future. The market value of the asset is then derived by summing all future expected (or probability-weighted) cash flows, adjusted for timing and risk through the application of an appropriate discount rate.

Another technique is the market approach, also referred to as the comparables or relative valuation approach. In this method, the valuer assesses value relative to, or in comparison with, the observed market values of similar assets for which information is available. The approach is based on another fundamental principle of economics, the law of one price, which states that identical assets must sell for the same price because, otherwise, opportunities for risk-free profit would exist by buying the cheaper asset and simultaneously selling the more expensive one. In practice, the asset being valued usually is not identical to the assets whose market values can be observed, and the valuer must make appropriate adjustments. This means that the market approach relies critically on the similarity, or comparability, of the assets being valued and on the ability to make the necessary adjustments. The technique is often used as a cross-check on the valuation produced by a DCF. When future expected cash flows cannot be estimated with sufficient reliability for a DCF, the market approach may be the primary valuation method.

---

4 International Valuation Standards 2020, ¶ 30.1.

5 Of course, if the asset or company being valued is itself publicly traded or has been sold or traded close to the valuation date, and under similar conditions to the valuation situation, then the observed market value typically takes priority.

## Accounting-based asset valuation

What is AAV?

The third valuation approach is generally referred to as the asset-based valuation (ABV) method, which values a company as the collection of its individual assets and liabilities. Although it is sometimes called the costs method, ABV does not value the assets at cost, but rather at the estimated market value of each asset or liability. A special type of ABV is the AAV method, in which the valuer turns to information from the financial statements as a starting point to determine FMV of an asset or liability.

Three types of financial accounting statements are predominantly used for AAV:

- the balance sheet (or statement of financial position) is the main source of information when trying to determine the accounting or the book value of a company's assets or liabilities. Its role is to present a snapshot of the company's assets, liabilities and equity at a given moment;
- the income statement<sup>6</sup> presents a company's financial performance during a particular period, usually a quarter, half-year or year. The income statement shows a company's accounting revenues, expenses and net income (profit) and their components; and
- the cash flow statement<sup>7</sup> reports the sources and uses of cash during a particular period. It provides additional information since the income statement is usually prepared on an accrual (non-cash) basis.

When is AAV used in arbitration?

Parties to an arbitration may argue in favour of an AAV method when they consider that an income or a market approach is not appropriate. They may argue that projections of cash flows could not be estimated with reasonable certainty and would be speculative<sup>8</sup> or that the business being valued is not a going concern.<sup>9</sup>

---

6 More precisely either a single statement of comprehensive income or a statement of comprehensive income and an income statement.

7 Some companies also publish a statement of changes in equity tracing the owners' investment over time.

8 'Speculative' should not be confused with 'low-probability'. Take an expropriated investment that has a known probability, say 10 per cent, of generating \$10 million in profit and a 90 per cent chance to yielding nothing. Nine out of 10 times, the claimant would have not made a profit, but the expected profit of \$1 million is straightforward to assess and reliable. The key is that the probabilities can be reasonably estimated. Early-stage investments in the mining and oil sectors often have this type of payoff structures. For example, exploration-stage mining projects have a high probability of failure, yet the market value of 'junior mining' companies, which can serve as benchmarks for relative valuation, is not zero and in fact can be quite large.

9 This may include, for example, (1) a low-margin business in a competitive industry that owns marketable real estate that has appreciated over time because of its development value (such that the value of the assets exceed the value of the business itself), (2) businesses in financial distress valued at the liquidation value of their individual assets, and (3) early-stage investments that lack historical information from which to calculate future cash flows with reasonable certainty. A frequently used definition is 'an enterprise consisting of income-producing assets which has been in operation for a sufficient period of time to generate the data required for the calculation of future income and which could have expected with reasonable certainty, if the taken had not occurred, to continue producing legitimate income over the course of its economic life in the general circumstances following the taking by the State'. (World Bank Guidelines on the Treatment of Foreign Direct Investment, Section IV, ¶ 6).

Where there is insufficient information to quantify the cash flows and there are no reliable comparables, an AAV method may serve as a valuation tool of last resort.

### Book values are not all alike

The starting point for an AAV approach is usually the value recorded in the balance sheet, referred to as the book value. Depending on the type of asset or liability and on the accounting standards that apply, companies record assets and liabilities on their balance sheet as either historical cost or at fair value.<sup>10</sup> It becomes clear from the start that using the book values indiscriminately can lead to inconsistent and unreliable valuations simply because of the different ways assets and liabilities are accounted for on balance sheets.

Accounting standards provide guidelines for when a company should record an asset or liability at fair value or at historical cost. Fair-value accounting usually applies to financial assets, including securities, derivatives and hedges, and employee stock options.<sup>11</sup> Fair value measurement implies regular revaluations so that the book value of the assets generally reflects the market value at the time of the revaluation as assessed by the company and reviewed by the auditors.

Most commonly, companies will record assets at their original or historical cost, which is the cost required to purchase or create the asset and to bring it to the location ready to be used for its intended purpose.<sup>12</sup> These costs may include purchase cost, sales taxes, delivery charges, customs duties and set-up costs.<sup>13</sup> Accounts will then depreciate the historical cost of the assets over their defined useful life, which is defined in accounting rules by broad categories of equipment (e.g., computer hardware) or left at the discretion of the company. The accounting useful life may differ substantially from the asset's actual economic life. Figure 2, below, illustrates an example of how the two accounting treatments would record value for an asset that (1) initially performs well, (2) undergoes an economic shock that reduces value, and then (3) sees some recovery.

---

10 For purposes of our discussion, we treat fair value to be a measure of market value. However, under certain circumstances, this is not the case.

11 Fair value accounting generally applies to financial assets, but only if they are available for sale or held for trading. The financial assets that are held to maturity are recorded at historical cost and can be impaired to reflect a significant decrease in their market value compared to their book value.

12 Although financial statements record costs, and sometimes arbitration tribunals seek evidence of 'investment costs' or 'amounts invested', our focus here is not on costs, but rather using accounting information to estimate market value.

13 These costs will be included on the balance sheet to the extent that they are *capitalised*, which means they are treated as investments recorded as an asset on the balance sheet. Sometimes certain costs are *expensed*, meaning that they are not included in the value of the asset recorded on the balance sheet but instead appear as expenses in the respective year's income statement.

Figure 2: Book values under historical cost and fair value measurement v. market value

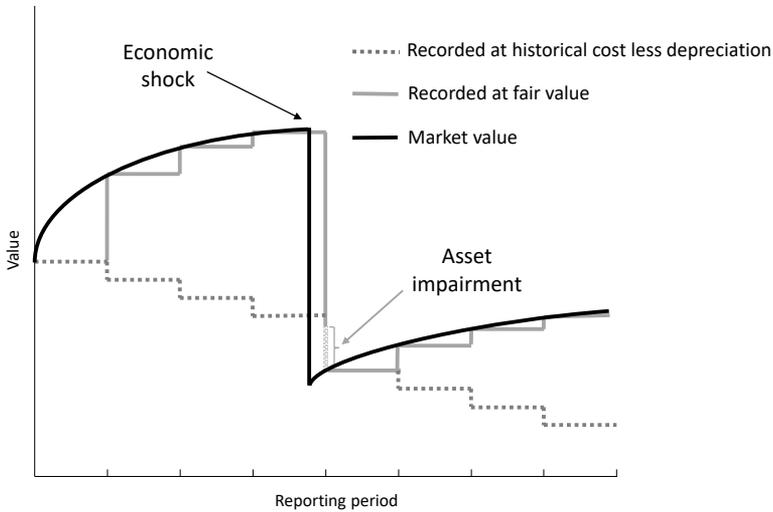


Figure 2 shows that under fair-value measurement (solid grey line), the value recorded in the accounts would follow market values (black line) at each revaluation date. The use of fair value accounting indicates that a market price typically exists for the asset, or a market approach is reliable, meaning that AAV will rarely apply. When book values are recorded at fair value, the AAV value can provide a cross-check for valuations obtained using the other approaches, assuming that the valuation date and assumptions used for the accounting valuation match those of the claim in question.<sup>14</sup>

For historical cost accounting, Figure 2 shows that, as time passes, the market value of assets may significantly depart from the value recorded in the accounts, indicated by the gap between the dotted grey and black lines. The book value of assets recorded at historical cost will decrease as depreciation, depletion and amortisation expenses are incurred, even while the real business may outperform expectations and increase in value.

In historical cost accounting, companies are usually required to carry out revaluations only when the market value falls below the book value, known as a write-down. Thus, the book value of an asset immediately after an impairment might be a good proxy for its FMV, as shown in Figure 2.<sup>15</sup>

### From book value measured at historical cost to FMV

The basis for considering costs as a proxy for FMV at creation or purchase is of the expectation that market and competitive forces would push towards that end.

<sup>14</sup> The book value of an asset recorded at fair value is obtained using either the income or the market valuation approaches. Usually companies provide extensive disclosures with respect to the details of the accounting valuation; however, this is not always the case. Giving preference to the book value over other methods of valuation implies adopting the assumptions used to obtain that book value even when they are unknown.

<sup>15</sup> Under certain conditions, impairment reversals are possible under IFRS rules. Similarly to a write-down, the value immediately after an impairment reversal may also indicate a proxy for fair market value, as long as the reversal of the previous impairment is not total.

At inception, the investment should not be worth less than the expected cost, as otherwise a rational investor would not have progressed with the investment.

Similarly, in a fully competitive market, new investment should not be worth substantially more than the expected costs, owing to market pressures on prices and returns, though in less competitive markets that may arise, and it is the act of making such investments that in turn increases competition.<sup>16</sup>

However, these points hold only at the time the project starts. Over time, accounting values recorded at historical cost will almost certainly deviate from market values, meaning that book values require adjustments to approximate market values. Some experts have proposed this approach, usually referred to as the adjusted-balance sheet or adjusted book-value approach.<sup>17</sup> We discuss some of the more common adjustments a valuer must consider to estimate FMV, which can be grouped into two main categories:

- adjustments to account for the passage of time, the resolution of risks or changes in market conditions between the reporting date and the valuation date; and
- adjustments that arise as a result of accounting conventions.

### Adjustments to account for changes between reporting date and valuation date

There are a variety of adjustments to financial statements to account for changes between the reporting date and the valuation date. We discuss some of the most important ones here.

#### *Time value of money and risk during construction*

For assets that have long construction periods, recording them at historical cost ignores that investors expect to earn a return on invested amounts. Suppose an asset costs \$100 to build up-front and will become productive in two years. At production start, assuming all market conditions evolve as expected, the book value of the asset would still be \$100,<sup>18</sup> but the asset must be worth more than \$100. No rational investor would invest \$100 in a risky asset at the start of construction only to receive an asset worth the same \$100 two years later, when construction is completed, when more could be earned during that period by making alternative investments. Investors will demand to earn the cost of capital for the asset, which is the return they could expect if investing in other assets of similar risk during the same period.<sup>19</sup>

#### *Resolution of systematic risk*

Investors do not value assets in isolation, but as part of their portfolios. The more diversified a portfolio is, the smaller the effect of any single asset's specific risk on the variability of the portfolio's returns. However, systematic risk, also known as market risk, does not disappear

---

16 In simple terms, if investors could generate value of \$120 by investing \$100, then other investors would come into the market reducing prices until the value is \$100 for everyone.

17 American Society of Appraisers, ASA Business Valuation Standards, 2009, 'Definitions', p. 25.

18 Normally a company starts recording depreciation only when production starts.

19 We note that some assets partially address such a return by including interest accrued during construction in the capital base of an asset, which recognises the return demanded by debt investors. A full treatment of the cost should also include the return to equity and other investors. This is distinct from the application of pre-award or post-award interest. See M Alexis Maniatis, Florin Dorobantu and Fabricio Nunez, 'A Framework for Interest Awards in International Arbitration', 41 *Fordham Int'l L.J.* 821 (2018).

in diversified portfolios, because it correlates with all the assets in the portfolio. That is, systematic risk affects all assets. The risk that an asset value would drop along with the entire market if the global macroeconomic conditions deteriorate is an example of systematic risk. The cost of an asset reflects macroeconomic conditions at the time when the asset was developed or purchased. Unexpected changes in conditions, such as inflation, interest rates, commodity prices, exchange rates, will affect the market value of an asset.

#### *Resolution of project-specific risks*

The cost of acquiring or developing an asset may diverge substantially from the market value of the investment once project-specific risks have resolved. Consider for example, a lottery ticket that sells for \$10 for an opportunity to win a prize of \$1 million. If the ticket is the winner, its value is \$1 million, and its value would be zero otherwise. In either case, once the risk has resolved, the cost of the ticket (\$10) has no bearing on its value (either \$1 million or zero.) Many projects in the resources sector are similar to this example. Companies invest resources in exploration with some expectation of success or failure. Once the uncertainty has resolved, the market value of the project will reflect the outcome, and will depart from the amounts spent in the effort. Similar, if often less extreme than the above example, non-systematic risks are present in many investments; for example, risks relating to new products.

#### *Country risk*

This refers to factors specific to the country in which the assets are located, including exposure to social conditions (e.g., risk of civil unrest) and political conditions (such as the chance of expropriation, regulatory changes or potentially discriminatory treatment). As with macroeconomic conditions, unexpected changes in the level of country risk will affect the market value of an asset. Moreover, for the calculation of damages, certain actions or potential actions may be excluded from the valuation as a matter of law. For example, parties often argue that the risk of expropriation, from which investors are protected in bilateral investment treaties, should be excluded in a related arbitration for damages.

#### *Growth and competitive conditions*

Expected growth rates vary significantly across companies, industries and geographies. However, a company's growth rate typically is expected to approach the industry growth rate over time, and few companies are able to grow more quickly than the economy for very long periods.

In the long term, competition will drive the return on a new investment to its cost of capital. Economists refer to such an investment as the zero economic profit or zero net present value investments. New assets in competitive markets earn a return, but only equal to the return available to other investments of similar risk. Thus, in a fully competitive market, the market value of a new asset equals its cost.

In markets that are less competitive, assets may have market values above their costs. However, where extraordinary profits exist, they invite entry that will erode profitability over time as competition increases. This effect should be considered. For example, if assets were developed or purchased at a time when little competition existed (and none was

expected to develop), the acquisition cost, and hence, its book value, will reflect these conditions and may overstate market value. Similarly, the market value of assets acquired in an industry that has since entered unanticipated decline, perhaps with excess capacity, may well fall below their historical cost.

Assets may earn extraordinary returns for extended periods in markets that are not fully competitive if the business or asset has a durable competitive advantage.<sup>20</sup> Businesses spend significant resources and time developing innovative products, creating brand loyalty and the perception of superior quality, to erect barriers to entry and protect long-term extraordinary profits. As we explain below, many of these expenditures are not included in the book value of the corresponding assets (i.e., they are not capitalised).

## **Adjustments that arise because of accounting conventions**

Book values have to comply with the accounting standards in place at the time they are recorded. Although the accounting standards fulfil many useful roles, they do involve a certain degree of simplification and generalisation, which is not helpful when valuing an asset in the context of arbitration.

### *Non-balance sheet items*

The most common approach to AAV considers the amounts recorded in the balance sheet of the company. However, the balance sheet assets will only measure costs that the company capitalises, meaning those costs that the accounts recognise as an investment, as opposed to an expense.

In broad terms, non-capitalised or expensed costs are those that are required to keep a business operating, such as leasing office space or paying salaries of employees. Capitalised costs are those incurred in the production of an income-generating asset, such as paying an EPC contractor to build a power plant.

However, the distinction between these items is often not clear-cut; for example, the time spent by salaried employees in developing a new asset or product, or money spent on advertising: both are costs incurred to keep a business running, but also may create valuable assets at the same time. The choice to capitalise such costs or not relies on the judgement of the company and its auditors, and the accounting standards of the relevant jurisdiction. The accounts will only record non-capitalised costs on the income and cash flow statements in the period in which they were incurred.

Another example is goodwill that is generated internally: for instance, customer relationships, significant contracts, brand value created through a company's operations but for which the cost of creation cannot be easily quantified. Internally generated goodwill is not included on the balance sheet, specifically because of difficulties with measurement.

---

<sup>20</sup> This may include (1) innovative products that are difficult to copy or protected by patents, (2) perceived differences in quality or brand for which consumers are willing to pay a premium, (3) customers unwilling or unable to replace a product or service they use (i.e., high switching costs), and (4) industries in which large-scale production is more efficient than small-scale owing to economies of scale or scope such that a small or even a single producer is sufficient to supply all the market demand.

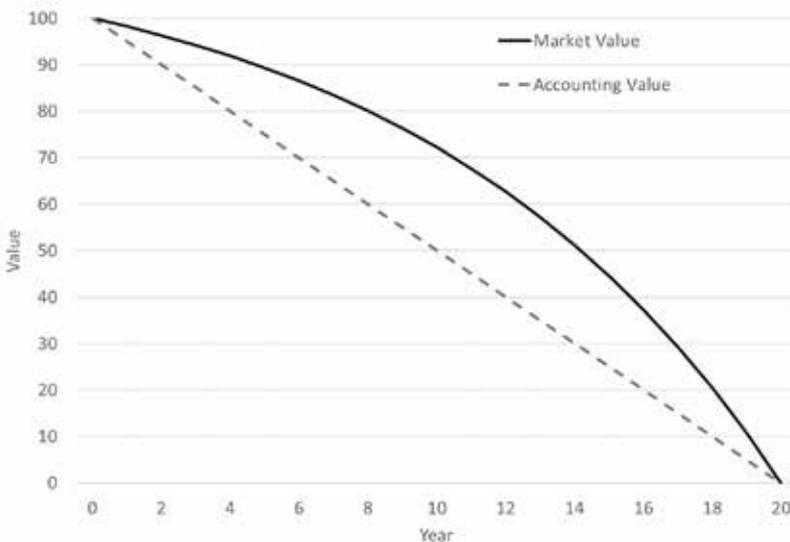
The objective of an AAV analysis that relies on historical costs is to capture the full effort expended to produce the asset in question, meaning that the analysis should include both the asset value recorded on the balance sheet and any incurred non-capitalised expenses that provide future benefits.

### Depreciation

Depreciation is the method under which a company's accounts recognise the reduction in the accounting value of an asset during its useful life. The useful life of the asset refers to the length of time during which the asset depreciates, and this is not the same as the economic life, which refers to the time span during which an asset earns more than the costs to maintain and operate it.<sup>21</sup> The depreciation method (e.g., accelerated, linear or decelerated)<sup>22</sup> and the useful life are either defined in accounting rules by broad categories of equipment or left at the discretion of the company. Very few tangible assets have cash flows structured in such a way that the value will decrease in the same way assumed by most accounting rules. As a result, book value measured at depreciated cost is typically divorced from market value.

Figure 3 illustrates how the two balances diverge over time for an sample asset paying a constant nominal amount each year for 20 years.<sup>23</sup>

Figure 3: Impact of straight-line depreciation against market value



21 That is, when an asset is past its 'economic life', it is more profitable to replace or scrap it, than to continue using it.

22 Accelerated depreciation allows the company to reduce the value of the asset by higher amounts in the first years of operations. Under linear depreciation, the company records a constant depreciation amount each year, while under decelerated depreciation, the company concentrates the higher depreciation amounts towards the end of the asset's useful life. Because depreciation is a tax-deductible expense, companies generally prefer accelerated methods, which reduce taxes earlier and increase them later in the asset's life, thereby increasing nearer-term cash flows.

23 The example assumes a cost of capital equal to 10 per cent.

The dotted grey line indicates the amounts recorded on the balance sheet, which decline by the same amount (that is, in a straight line) during the asset's life. The black line indicates the market value of the asset during the same period. The feature of the market value is that it behaves more like a mortgage balance – the initial payments largely cover the return, and a smaller portion pays off the principal. The effect is that the market value is always above the book value.

### *Inventory*

Companies maintain stocks of finished goods, raw materials and other production inputs that are intended for further processing and sale. These inventories are recorded as assets on the balance sheet. The value of inventory changes frequently as companies purchase new materials and sell finished goods. Under historical cost accounting, there are three main conventions to record inventory. The first in, first out (FIFO) rule assumes that items leave inventory in the same order they entered. The last in, first out (LIFO)<sup>24</sup> rule requires the opposite: items that have been in inventory the shortest time are assumed to leave first. Under the average cost convention, the value is carried at the weighted average cost of the items in inventory.

As for other assets, companies might be required to perform revaluations and record a write-down when the market value falls *below* the book value. In the case of inventories, this is known as the lower-of-cost-or-market rule. Under the main accounting standards, market value in this context usually refers to the replacement cost<sup>25</sup> of the inventory, as long as the market price is not above the net realisable value<sup>26</sup> or below that net realisable value, less the normal profit margin.

Given the different accounting conventions to value and revalue inventory, it is unlikely that the book value reflects market value.

### *Intangible assets*

The intangible assets held by a company are those that do not have a physical presence. These items can include licence rights, branding, patents, goodwill and human capital. Intangible assets face many of the same issues as tangible assets discussed above: the market value may depart from the expense incurred to generate or acquire the intangible asset reported in the accounts, and may not be capitalised in the balance sheet at all.

To begin, a valuer must consider carefully how the financial statements record the costs of the intangibles, and whether those records can reflect market value. For example, the search algorithm developed by Google is certainly worth more than the cost of the effort to create it. In such cases, historical costs recorded in the accounts, whether capitalised or not, do not offer a fair reflection of the true market value. In contrast, the cost of a short-term licence acquired through a competitive auction is more likely to be reflective of the market value of the licence.

---

24 The LIFO rule is permitted under GAAP but not under IFRS.

25 Replacement cost represents the price that a company would pay to replicate the utility of the asset, not the exact physical properties of the asset.

26 Net realisable value is defined as the estimated selling price minus estimated selling costs (e.g., completion, disposal).

An important intangible asset is goodwill. The concept of goodwill is often amorphous. One specific example is when a company purchases an asset for more than its 'fair value', reflecting synergies that the acquiring company values that another buyer would not.<sup>27</sup> To balance the accounts, the acquiring company transfers the assets into its own balance sheet at fair value and records the difference created by any synergies as goodwill. The total sum, asset plus goodwill, will equal the transaction price. In such cases, by using the accounting measure of goodwill to value an asset in addition to the fair value, the valuer is simply relying on a historical transaction price, and the value of the synergies, as they may have existed at the time. Rather than assessing value through the accounting records, a more transparent valuation practice would be to analyse whether the past transaction price is useful guidance for the specific valuation date.

### Specific applications of AAV

In this section we consider two special cases – debt and regulated industries – for which information in the financial accounts can provide more straightforward guidance on estimating value.

#### *Debt*

Like any investment, the value of debt may diverge from the nominal outstanding amounts recorded in the accounts as market conditions and risks evolve.<sup>28</sup> Nevertheless, in many situations, valuers and arbitral tribunals take the FMV of debt to be equal to its book value. Such an assumption may be reasonable, because while overall conditions may change, debt has specific characteristics that limit the divergence from book value.

The nature of debt is that significant increases in the cash flows of the underlying company do not directly benefit the debt holders, who will receive only the promised cash flows even if the company becomes more valuable.<sup>29</sup> Moreover, should market conditions change, for example through lower interest rates, increasing the value of existing debt above its book value, a company may retain the option to refinance (in other words, pay down the expensive debt at face value and issue new debt). The result is that even in upside situations, the book value of debt would remain close to its market value.

In general, the main movements in debt market value occur in downside situations.<sup>30</sup> If there is a possibility that the underlying asset may not be sufficient to repay debt, then investors will apply a discount to the book value of debt to reflect that they may not recoup the full amounts.<sup>31</sup> In this kind of situation, book value can no longer provide a reasonable guide, aside from an upper bound, and one must instead perform a cash flow analysis.

---

27 In the presence of synergies, an acquired asset may be worth more to the acquirer than the price it pays. The reason is that in competitive markets, the acquirer must only pay more than the value to the potential buyer with the next-highest value, not its full value to the acquirer.

28 Funds trade billions of dollars of debt in financial markets every day, and certainly, they consider more information than the outstanding amounts.

29 We note that a company increasing in value may increase the market value of debt by improving the credit risk.

30 Such situations are often important in the 'actual' circumstances of an arbitration case in which companies can be on the verge of insolvency.

31 We note that an inability to meet interest and principal repayments does not necessarily mean that the debt will trade at a discount.

In practice, there are many types of debts and some will align more closely with the book value than others. A simple example is one of a bond with a variable interest rate versus a fixed interest rate. Variable rate debt will update interest payments for macroeconomic changes, realigning the payments with market conditions. The effect is to keep the market value of the debt closer to the book value. Conversely, the interest payments for fixed rate debt will not update, and market value will deviate more greatly from book value as interest rates change.<sup>32</sup> A valuer must consider the specific characteristics of the existing debt to assess whether book value can provide a reasonable proxy for a market valuation.

### *Regulated industries*

The example of debt offers insight into when historical amounts can be more useful: when the market value of the asset remains stable even as macroeconomic conditions change. Some assets in regulated industries share this characteristic.

As a general principle, many regulators design regulatory regimes to allow investors to earn a reasonable return on their investments. If investment amounts recorded in the accounts determine tariffs, which determine cash flows, it appears logical that the invested amounts can provide insight into value. However, there are many flavours of regulation, and some will allow for greater departures from cost bases than others.

We first consider assets with the strongest link to book values: those that rely directly on accounting information to determine tariffs in periodic reviews.<sup>33</sup> The aim of these price reviews will be to realign the cash flows of the company for investments and changes in macroeconomic conditions.

We can imagine a simplified example of a distribution network that has a regulated asset base of \$100 at the start of a regulatory period, based on the assets recognised in its accounts. During the regulatory period, the company invests \$20 and receives repayment of previous investments of \$10 through the tariffs reflecting its accounting depreciation.<sup>34</sup> In the following regulatory period, the balance sheet of the company will show \$110 (the starting value of \$100, plus the \$20 of additional investment, minus depreciation of \$10, reflecting repayment). The regulator will design tariffs for the following period allowing the company to earn a present value of \$110, equal to the balance sheet value of the assets.

Even in such cases, where value is determined via accounting information, market value may depart from the book values. Most modern regulatory regimes supplement tariffs with incentive mechanisms that reward efficiency and penalise inefficiency. If a company does better than the efficiency targets, then the company can expect rewards for investors and

---

32 For example, in 2000, Germany would have issued a 30-year bond paying annual interest of around 6 per cent. Currently there would be 10 years left to run on this bond. These interest payments would be extremely valuable today as an equivalent 10-year bond yield is minus 0.5 per cent. As the German government cannot repurchase this bond from investors at face value, investors would pay far above the face value (or book value) of the bond to acquire the stream of payments. It would not be reasonable to value this debt with reference to the face value as would be recorded in the accounts.

33 These assets under such regulation are normally those that require constant reinvestment, such as distribution networks.

34 This is in addition to a return on investment and operating costs.

the asset will increase in value. Similarly, a company that does worse than the targets will expect to have lower value. The ultimate market value of the regulated asset will then be its accounting asset base plus or minus the effects of any incentive schemes.

Even in the absence of these schemes, it is widely recognised that, on average, regulated companies trade above book values. The underlying causes for this pattern are debated and may vary from company to company. Potential reasons include that rate-regulated companies may have intangible value, for example through branding or growth opportunities and synergies provided through their regulated assets.

FMV may also depart from the accounting value because of changes in macroeconomic conditions within each regulatory period. Although the future price control may adjust the tariff, the asset will earn the set cash flows (which may be above or below the market level) until the adjustment occurs.<sup>35</sup>

In the case of companies under regulatory regimes not based on accounting information, movements away from accounting values may be larger, particularly where there is no regulatory mechanism in place to correct for such divergence. Many renewable power plants are regulated based on feed-in tariffs, which set a tariff regime for the lifetime of the power plant with no periodic reviews. By fixing a tariff with a certain design, the regulator transfers certain macroeconomic risks to the investor. For example, some tariffs are flat during the life of the asset, whereas others are indexed to inflation. Should inflation turn out different to expectations, the market value of the asset without indexation will deviate from its book value, while the asset with indexation will tend to stay closer, all else being equal.

Ultimately, for most regulated assets the primary valuation method will remain the DCF, as cash flows of regulated assets should be sufficiently predictable. A DCF will embed the effect of both relative efficiency and other effects of valuation through the resulting cash flows and discount rates. However, even in those cases, AAV can assist a market-based valuation in the calculation of a terminal value for a regulated company undergoing periodic reviews.

A terminal value is a valuation shortcut, whereby a single value represents the present value of all future cash flows beyond that date. To project the cash flows in perpetuity for a regulated asset, a valuer would have to predict the outcome of regulatory reviews in each future period. However, rather than reconstructing a tariff review, a valuer can simply start with the asset base that the tariff seeks to provide compensation for and make adjustments for external factors that can affect value, such as efficiency targets.

In summary, even for regulated assets there are many reasons why market value can depart from invested amounts. However, given the nature of regulation, it may be useful to compare a valuation against historical investments.

## Summary and proposed framework

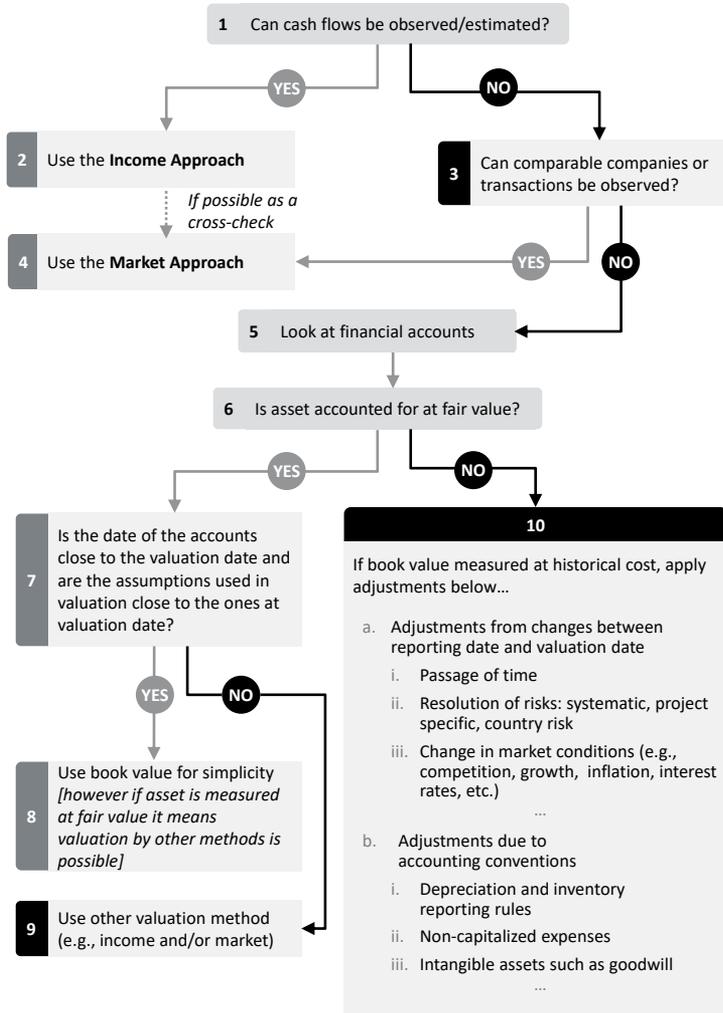
We conclude by proposing a framework to guide the selection and implementation of the AAV approach. This framework, depicted in Figure 4, reflects fundamental economic and financial valuation principles.

---

35 An exception to this would be if the tariffs allow *ex post* adjustments to compensate for such movements in following regulatory periods.

When estimates of future cash flows can be observed or reliably estimated (step 1), the income approach (such as the DCF method) is the primary valuation tool (step 2).<sup>36</sup> If this is not feasible, but there are reasonable comparable traded assets (step 3), the market approach can be used to estimate or infer the market value of the assets in question provided that appropriate adjustments are made to reflect differences between the subject assets and the comparable assets (step 4).<sup>37</sup>

Figure 4: A guide for selection and implementation of the AAV approach



36 As we explained, if the market value is observed directly because the asset or company being valued is itself is publicly traded or has been sold or traded close to the valuation date, and under similar conditions to the valuation situation, then the observed market value should take priority.

37 As we discussed, the market approach is often used as a crosscheck on the valuation produced by a discounted cash flow (as depicted by the arrow going from step 2 to step 4 in Figure 4).

When none of these methods is available, the valuer may turn to the financial accounts and use an AAV method (step 5). As we have explained, the valuer must first understand the accounting standards used to record the assets in question.

If the assets are recorded at fair value (step 6), adopting the book value implicitly accepts the assumptions used in the financial accounts. So the valuer must consider whether the date of the financial accounts is close to the valuation date, and if the assumptions used in the accounts are appropriate for the valuation (step 7). If this is true, the book value may be used as a proxy for market value (step 8). When either the valuation date or assumptions in the accounts do not match those in the valuation at issue, another approach, income or market must be used (step 9).

If the assets are recorded at historical cost (step 10), the values in the accounts will almost certainly fail to reflect market values, so book value will require adjustments. These adjustments arise from changes between the reporting and valuation date, which includes the passage of time, resolution of risks, and changes in market conditions. Other adjustments are necessary because of accounting conventions, such as depreciation and inventory reporting rules. Accounting conventions also dictate the way companies report intangible assets, or perhaps not report them all, as is the case, for example, with non-capitalised expenses or internally generated goodwill.

The significant and unavoidable challenges that arise when starting from accounting values to determine market values render the application of AAV difficult and, therefore, it is typically considered only a valuation tool of last resort.

# Appendix 1

## About the Authors

### **M Alexis Maniatis**

The Brattle Group

Alexis Maniatis has more than 30 years of experience in advising clients, providing consulting expertise and expert witness testimony, leading client teams, and supporting other experts on matters relating to a variety of industries across the globe. He is skilled in analysing valuation and damages issues in expropriations, contract disputes, competition-related litigation, asset and merger transactions, and regulatory proceedings. He has addressed matters including the development of expected cash flows, discount rates, control premia, country risk adjustments, prejudgment interest, and interpretation of acquisition transactions and publicly traded company values. A respected leader in the firm, Mr Maniatis has previously served several terms as the firm's president and one term as chairman of the board, directed Brattle's Washington and London offices, and led the litigation practice. He is consistently recognised as a Global Elite Thought Leader in *Who's Who Legal's* Arbitration Expert Witness and Quantum of Damages lists, among other accolades.

### **Fabricio Nunez**

The Brattle Group

Fabricio X Nunez is a senior associate in Brattle's Washington, DC, office. He has corporate and consulting experience in finance, valuation, securities and trading. He has prepared expert testimony on valuation matters before ICSID and the ICC and has advised clients in international arbitration proceedings. Dr Nunez has applied multiple techniques to value assets and companies in Latin America and around the world in a variety of sectors, including financial institutions, energy, mining and natural resources, telecommunications, paper and packaging products, and hospitality and leisure services. His experience also includes consulting on market manipulation and insider trading matters. Prior to joining Brattle, he was a senior economist in the global capital markets group of a large multinational company, where he advised on issues relating to asset liability management, and

interest rate, commodity and currency hedging. He also developed trading strategies across money markets, fixed income, currency and commodity markets. He has a PhD in applied economics from the University of Minnesota.

### **Ilinca Popescu**

The Brattle Group

Ilinca Popescu is a senior associate with more than 10 years' experience in litigation and finance projects. She has worked on valuations across a wide range of industries, such as gas and oil projects, renewable energies, district heating, banking and public transport. Her past projects involved extensive financial modelling and advice on regulatory issues. Ilinca assists with teaching the finance master's at London Business School. Ilinca has a master's degree in finance from Toulouse School of Economics.

### **Jack Stirzaker**

The Brattle Group

Jack Stirzaker is a principal at Brattle and heads the London office. Jack has experience in both regulation and litigation projects, particularly in the energy industry. Jack has over 12 years' consulting experience, and has testified and provided support for numerous arbitration and high court cases, performing valuations of projects across a broad range of different industries. Jack has a master's degree in natural sciences from Cambridge University, and assists with teaching the finance master's at London Business School.

### **The Brattle Group**

8th Floor, Aldermay House

10-15 Queen Street

London

EC4N 1TX

United Kingdom

Tel: +44 20 7406 7900

Fax: +44 20 7681 1695

[ilincapopescu@brattle.com](mailto:ilincapopescu@brattle.com)

[jack.stirzaker@brattle.com](mailto:jack.stirzaker@brattle.com)

1800 M Street NW

Suite 700 North

Washington, DC 20036

United States

Tel: +1 202 955 5050

Fax: +1 202 330 5220

[alexis.maniatis@brattle.com](mailto:alexis.maniatis@brattle.com)

[fabricio.nunez@brattle.com](mailto:fabricio.nunez@brattle.com)

[www.brattle.com](http://www.brattle.com)

an LBR business

Visit [globalarbitrationreview.com](http://globalarbitrationreview.com)  
Follow @garalerts on Twitter  
Find us on LinkedIn

ISBN 978-1-83862-212-1