

Global Arbitration Review

The Guide to Damages in International Arbitration

Editor

John A Trenor

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Published in the United Kingdom
by Law Business Research Ltd, London
87 Lancaster Road, London, W11 1QQ, UK
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www.globalarbitrationreview.com

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ISBN 978-1-910813-96-6

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

Acknowledgements

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

ALIXPARTNERS

A&M GMBH WIRTSCHAFTSPRÜFUNGSGESELLSCHAFT

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Contents

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, Angélica André and Heather Clark</i>	
2	Non-Compensatory Damages in Civil and Common Law Jurisdictions – Requirements and Underlying Principles	22
	<i>Reza Mohtashami, Romilly Holland and Farouk El-Hosseny</i>	
3	Damages Principles under the Convention on Contracts for the International Sale of Goods (CISG)	38
	<i>Petra Butler</i>	
4	Contractual Limitations on Damages	68
	<i>Gabrielle Nater-Bass and Stefanie Pfisterer</i>	
5	Overview of Principles Reducing Damages	78
	<i>Craig Miles and David Weiss</i>	
6	Damages Principles in Investment Arbitration	90
	<i>Mark W Friedman and Floriane Lavaud</i>	

Part II: Procedural Issues and the Use of Damages Experts

- 7 Procedural Issues107
 Sophie J Lamb, Samuel M Pape and Laila Hamzi
- 8 Strategic Issues in Employing and Deploying Damages Experts123
 John A Trenor

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

- 9 Overview of Damages and Accounting Basics145
 Gervase MacGregor, Andrew Maclay and David Mitchell
- 10 Assessing Damages for Breach of Contract155
 Ermelinda Begiraj and Tim Allen
- 11 Overview of Methodologies for Assessing Fair Market Value164
 Philip Haberman
- 12 Income Approach and the Discounted Cash Flow Methodology174
 Alexander Demuth
- 13 Determining the Weighted Average Cost of Capital196
 Charles Jonscher
- 14 Market Approach or Comparables204
 José Alberro and Paul Zurek
- 15 Asset-Based Approach and Other Valuation Methodologies219
 Mark Bezant and David Rogers

Contents

16	Taxation and Currency Issues in Damages Awards.....	229
	<i>James Nicholson and Sara Selvarajah</i>	
17	Interest.....	241
	<i>James Dow</i>	
18	Costs.....	253
	<i>Micha Bühler</i>	
19	The Use of Econometric and Statistical Analysis and Tools	271
	<i>Boaz Moselle and Ronnie Barnes</i>	

Part IV: Industry-Specific Damages Issues

20	Damages in Energy and Natural Resources Arbitrations.....	289
	<i>Manuel A Abdala</i>	
21	Damages in Construction Arbitrations	301
	<i>Wiley R Wright III and Mark Baker</i>	
22	Damages in Financial Services Arbitrations.....	310
	<i>Chudozie Okongwu</i>	
23	Damages in Life Sciences Arbitrations.....	320
	<i>Gregory K Bell, Andrew Tepperman and Justin K Ho</i>	
24	M&A and Shareholder Arbitrations.....	331
	<i>Kai F Schumacher and Michael Wabnitz</i>	

Contents

25	Damages in Intellectual Property Arbitrations	342
	<i>Trevor Cook</i>	
26	Damages in Competition/Antitrust Arbitrations.....	352
	<i>Carlos Lapuerta and Richard Caldwell</i>	
	About the Authors	361
	Contact Details	379

12

Income Approach and the Discounted Cash Flow Methodology

Alexander Demuth¹

Introduction

When applying the income approach, the theory of business valuation determines the value of a business by assessing the present value of its future net cash flows.² Since the requirement of full compensation is generally interpreted to put the damaged party into the same economic (i.e., financial) situation it would have been in but for the wrongful act, the methodology and approaches widely accepted for business valuation are also applied in the determination of damages.³

The following sections briefly introduce the discounted cash flow (DCF) methodology and its approaches, and then discuss, in the context of international arbitration, its application to the assessment of damages, the assumptions required to adequately and reliably deploy this methodology and the documentation required to support its results.

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- 1 Alexander Demuth is co-head of A&M GmbH Wirtschaftsprüfungsgesellschaft's international arbitration group and leader of its German disputes and investigations practice.
 - 2 Cf. Aswath Damodaran, *Damodaran on Valuation – Security Analysis for Investment and Corporate Finance*, Second Edition, 2006 (Damodaran (2006)), page 10; Tim Koller, Marc Goedhart and David Wessels, *Valuation – Measuring and Managing the Value of Companies*, Sixth edition, 2015 (Koller et al. (2015)), page 137; Mark Kantor, *Valuation for Arbitration – Compensation Standards, Valuation Methods and Expert Evidence*, 2008 (Kantor (2008)), pages 8 ff. or Joseph J. Galanti, *Business Valuation*, in *Litigation Services Handbook – The Role of the Financial Expert*, Fifth Edition, 2012 (Galanti (2012)), pages 8 ff.
 - 3 Cf. Mark A. Allen, Robert E. Hall and Victoria A. Lazear, *Reference Guide on Estimation of Economic Damages*, in *Reference Manual on Scientific Evidence*, Third Edition, 2011 (Allen et al. (2011)), page 448; or Michael K. Dunbar, Elizabeth A. Evans and Roman L. Weil, *Ex Ante versus Ex Post Damages Calculations*, in *Litigation Services Handbook – The Role of the Financial Expert*, Fifth Edition, 2012 ((Dunbar et al. (2012)), page 1.

The discounted cash flow methodology

Introduction

The DCF methodology determines the business value as the present value of expected future net cash flows discounted at a rate reflecting the time value of money and the risks attributable to these cash flows.⁴ Within the different approaches applied for valuing a business, it ‘comes with the best theoretical credentials’⁵ and ‘remains a favourite of practitioners and academics because it relies solely on the flow of cash in and out of the company, rather than on accounting-based earnings’.⁶ It is, therefore, less prone to manipulation through the use of accounting policies⁷ and avoids divergent results from the use of different accounting principles (e.g., International Financial Reporting Standards (IFRS), US-Generally Accepted Accounting Principles (US-GAAP)).

The DCF method distinguishes two general approaches, depending on whether the value is determined for only the equity investment in the business (known as ‘equity valuation approach’) or the entire business (known as ‘enterprise valuation approach’). Both approaches are broadly accepted but vary with regards to the relevant cash flows and discount rates.⁸

The equity valuation approach

The equity valuation approach calculates the value of equity by discounting the future net cash flows after debt payments and reinvestment needs (known as ‘free cash flow to equity’) at a rate reflecting only the cost of equity.⁹

The enterprise valuation approach

The enterprise valuation approach calculates the enterprise value of the business through discounting the future net cash flows before debt payments and after reinvestment needs (known as ‘free cash flow to the firm’) at a rate reflecting the cost of all sources of capital, applying a blended cost of capital.¹⁰ The equity value can be derived from the enterprise value by deducting the market value of non-equity claims¹¹ (i.e., primarily interest-bearing debt).

The weighted average cost of capital (WACC) approach is the most commonly used enterprise valuation approach. It is often used applying a constant discount rate, which would require a stable capital structure (i.e., a constant ratio of the market value of debt to the market value of equity). But, since the capital structure typically changes over time, the

4 For an overview of other valuation methodologies, see the chapter on ‘Overview of Methodologies for Valuing Fair Market Value’ in this publication.

5 Damodaran (2006), page 10; cf. Kantor (2008), pages 131 f.

6 Koller et al. (2015), page 137.

7 Cf. Patrick A. Gaughan, Henry Fuentes and Laura Bonanomi, Cash Flow Vs. Net Income In Commercial Litigation, *Litigation Economics Digest* 1(1), 1995 (Gaughan et al. (1995)), page 13.

8 Aswath Damodaran, *Investment Valuation - Tools and Techniques for Determining the Value of Any Asset*, Third Edition 2012 (Damodaran (2012)), pages 12 ff.

9 Cf. Damodaran (2006), page 12; or Damodaran (2012), page 351.

10 Cf. Damodaran (2006), pages 11 and 209; Damodaran (2012), page 380; or Koller et al. (2015), page 138.

11 Cf. Koller et al. (2015), page 150 f. for a list of the most common non-equity claims.

use of a constant WACC may not be appropriate. Instead, it needs to be adjusted throughout the valuation period to reflect the changes in the capital structure.¹²

Alternatively, the adjusted present value (APV) approach can be employed, which determines the enterprise value by first calculating the enterprise value of the business assuming no leverage (i.e., no non-equity claims), and second, adding thereto the value of the tax implications of debt financing (i.e., the value of the tax-deductibility of interest expenses). This approach uses cost of equity to calculate the unlevered enterprise value and cost of debt to calculate the present value of the tax-savings from debt financing.¹³ Theoretically, the APV and WACC approaches should determine an identical business value, as the only distinction between them is how the impact of debt financing is considered.¹⁴

Application of the discounted cash flow methodology to the assessment of damages in international arbitration

Introduction

The use of the DCF methodology discussed above will generally require some modification to quantify damages in international arbitration, as the required full compensation may necessitate a ‘damages computation that is markedly different than a standard business valuation’.¹⁵

The standard approach to determine this full compensation is a comparison of the damaged party’s actual situation with the situation it would have been in ‘but for’ the wrongful act (i.e., the ‘but-for method’).

Depending on the facts and circumstances, damages will be assessed as a loss in business value or as lost profits.

Also, while business valuation is typically based on the information available at the valuation date (the *ex ante* approach) the quantification of damages also regularly considers information available up to the date of the assessment (the *ex post* approach).

Furthermore, in some instances the quantification of damages may be easier by directly assessing the cash flow resulting from the wrongful act (direct assessment) than by comparing two sets of cash flows with and without the influences of the wrongful act (indirect assessment).

Finally, a prerequisite of a useful damage quantification is the consistent application of these concepts, including the use of a proper valuation model.

12 Even though modelling these changes requires an iteration and is therefore more complex than using a constant WACC, the use of a period-specific WACC has become market standard as supported by Damodaran (2006), page 194: ‘one of the biggest strengths of the [WACC] model is the ease with which changes in the financing mix can be built into the valuation through the discount rate.’

13 Cf. Koller et al. (2015), page 137 and pages 155 ff.; Damodaran (2006), pages 211 ff; or Damodaran (2012), pages 398 ff.

14 Cf. Koller et al. (2015), page 137; or Damodaran (2006), page 215.

15 Everett P. Harry, Lost Profits and Lost Business Value – Differing Damages Measures, *Dunn on Damages*, Issue 1, Winter 2010 ((Harry (2010))), page 6.

The but-for method

The but-for method determines the amount required to compensate the damaged party by comparing its actual position to the hypothetical position it would be in but for the wrongful act.¹⁶ The but-for scenario always refers to a hypothetical situation, and thus cannot be established with certainty, but needs to comply with the principle of reasonable certainty and avoid undue speculation. In contrast, the actual situation is generally observable (e.g., from the damaged party's accounting records). Nonetheless, the actual situation may also require adjustments, most importantly with regards to the identification, assessment and elimination of other factors that may have influenced the actual situation but are not attributable to the wrongful act¹⁷ (e.g., external factors such as a market decline). Furthermore, to the extent the damages continue beyond the date of the damages assessment, the actual scenario will necessarily also include a financial forecast of the expected actual development.¹⁸

Loss in business value v. lost profits

Applying the income approach, damages may be assessed as the loss in business value or as lost profits.¹⁹ While the loss in business value is determined as the difference between the present value of all future earnings or cash flows of the business with and without the wrongful act (i.e., by comparison of two business values), lost profits represent the difference between the earnings or cash flows with or without the wrongful act during the damages period.²⁰

Even though the loss in business value is conceptually comparable to a standard business valuation, the latter aims to determine the fair value of a business based on objective measures, which may not be applicable to the damaged party, thus rendering its results inappropriate for the determination of damages.²¹ These approaches only converge for damages incurred through the destruction of a business, since these are generally assessed as the market value of the business at the time of loss.²²

The lost profit approach calculates damages as but-for profits less actual profits, where but-for profits are determined as but-for revenues, which would have been earned during the damages period but for the wrongful act, less the avoided cost (i.e., the incremental costs that were not incurred because of the loss of revenue).²³

16 Cf. Allen et al. (2011), page 432; or European Commission, Practical Guide, Quantifying Harm in Actions for Damages based on Breaches of Article 101 or 102 of the Treaty on the Functioning of the European Union, 2013 (EC (2013)), page 7. While this guide is concerned with antitrust issues, the methods discussed equally aim for full compensation of the damaged party.

17 Cf. Richard A. Pollack, Scott M. Bouchner, Craig M. Enos, Colin A. Johns and John D. Moyl, AICPA Practice Aid 06-4, *Calculating Lost Profits*, 2006 (Pollack et al. (2006)), page 20.

18 Cf. Pollack et al. (2006), page 27.

19 Cf. Harry (2010), page 6.

20 Cf. Kenneth M. Kolaski and Mark Kuga, Measuring Commercial Damages via Lost Profits or Loss of Business Value: Are these Measures Redundant or Distinguishable?, *Journal of Law and Commerce*, Fall 1998 (Kolaski/Kuga (1998)), page 1.

21 Cf. Harry (2010), pages 6 f.

22 Cf. Kolaski/Kuga (1998), page 5.

23 Cf. Pollack et al. (2006), para. 4; or Elizabeth A. Evans, Joseph J. Galanti and Daniel G. Lentz, Developing Damages Theories and Models, in *Litigation Services Handbook – The Role of the Financial Expert*, Fifth Edition,

In comparison, an important conceptual distinction between the loss in business value and lost profits is the time horizon considered in the damages assessment and the additional assumptions and considerations required for the loss in business value as a result thereof (e.g., the discussion of a terminal value or growth rate).²⁴ Since, *ceteris paribus*, both concepts should theoretically determine the same amount of damages for a finite damages period during which a reduction of earnings or cash flow has been caused by a wrongful act, the use of the lost profits approach appears preferable to avoid these additional assumptions required for the loss in business value approach.

Another important distinction relates to the information used. While the assessment of the loss in business value typically only considers information available (i.e., known or knowable) at the date of the wrongful act, the determination of lost profits typically also includes information available until the date of the damages calculation (i.e., makes use of hindsight).²⁵

As lost profits are theoretically a subset of the loss in business value, double recovery needs to be avoided when both concepts are applied in parallel.²⁶ Furthermore, it is discussed whether a claim for lost profits may be limited by the business value at the date of loss.²⁷

Ex ante v. ex post approach

When assessing business damages, the ‘unavoidable issue of temporal perspective’²⁸ needs to be decided (i.e., whether to apply the *ex ante* or the *ex post* approach). The *ex ante* approach ‘relies only on information that was known or knowable as of the date of the breach’²⁹ and requires all damages to be discounted back to the date of the wrongful act. In contrast, the *ex post* approach ‘relies on all information that is known or knowable up to the date of trial’³⁰ and requires prior damages to be compounded, if permitted,³¹ and later damages to be discounted to that date.

One argument for the *ex ante* approach refers to the allocation of risk as it properly measures the damages at the time of the wrongful act capturing the probability of the entire spectrum of outcomes, whereas the *ex post* approach converts a risky business into a certain outcome.³²

While the *ex ante* approach is thus ‘confined to reasonable expectations at the time’,³³ the reconstruction of the information available and reasonable expectations as of the date

2012 (Evans et al. (2012)), page 29.

24 See ‘Developing and reviewing terminal value and terminal growth rate’, *infra*.

25 See ‘Ex ante v. ex post approach’, *infra*.

26 Cf. Kolaski/Kuga (1998), pages 10 f.

27 Cf. Kolaski/Kuga (1998), page 9; or James L. Plummer, Is the Value of a Firm the Upper Limit of Future Lost Profits in Business Litigation?, *Litigation Economics Digest* 1(1), 1995 (Plummer (1995)).

28 John D. Taurman and Jeffrey C. Bodington, Measuring damage to a firm’s profitability: ex ante or ex post?, *The Antitrust Bulletin*, Spring 1992, (Taurman/Bodington (1992)), page 59.

29 Pollack et al. (2006), page 36; cf. Dunbar et al. (2012), page 2.

30 Pollack et al. (2006), page 36; cf. Dunbar et al. (2012), page 3.

31 Cf. Pollack et al. (2006), pages 33 f. for a discussion of prejudgment interest on past losses.

32 Cf. Dunbar et al. (2012), pages 4 f.

33 Taurman/Bodington (1992), page 71.

of the wrongful act may prove difficult and is ‘vulnerable to actual data’.³⁴ To overcome these difficulties, typical reference materials include historic financials, contemporaneous forecasts and budgets, industry or market studies, including studies published shortly after the time assuming that the information was available prior to their publication, or contemporaneous analyst coverage. To ensure consistency with this approach, subsequent information, including about mitigation, should not be considered.³⁵ Nevertheless, sometimes subsequent information is used as a benchmark to assess the reasonability of the contemporaneous financial forecast.³⁶

The *ex post* approach is arguably better suited to warrant full compensation (i.e., putting the damaged party in the same position it would have been in but for the wrongful act at any time),³⁷ not least through the use of hindsight, which reduces uncertainty. But, the use of hindsight may also influence the development of the hypothetical but-for scenario, potentially allowing for subtle manipulation.³⁸ Furthermore, the *ex post* approach may result in the damages award exceeding the fair value that the damaged party was deprived of, as hindsight will clarify whether risks have materialised (i.e., ‘the claim for compensation may appear to be worth more than the opportunity itself’).³⁹ Finally, damages will vary over time until the end of the damages period as new information becomes available.⁴⁰

In practice, a hybrid approach can sometimes be found ‘in which all lost profits are discounted back to the date of the breach, but the practitioner would rely on all information that was available up to the date of trial’,⁴¹ thereby using the book of wisdom to eliminate ‘some speculation as to what the cash flows would have been’.⁴²

Since both approaches are widely accepted and neither is theoretically unsound, their applicability and reasonability needs to be carefully assessed, considering the facts and circumstances of the individual case, as their results may vary significantly.⁴³

Direct v. indirect assessment of damages

Damages can be assessed directly or indirectly, depending on whether the impact of a wrongful act on the relevant cash flow can be identified and quantified distinctly.

As the direct assessment of damages avoids the need for comparison and the cash flows used are identified based on their causal dependence on the wrongful act, this approach appears preferable from an evidential perspective. But, this approach may underestimate the amount of damages by failing to identify all direct influences on the cash flow and its inability to capture consequential damages or mitigating factors. Furthermore, even if identified,

34 George P. Roach, *Correcting Uncertain Prophecies: An Analysis of Business Consequential Damages*, *The Review of Litigation*, Winter 2003 (Roach (2003)), page 68; Cf. Dunbar et al. (2012), page 4.

35 Cf. Dunbar et al. (2012), page 5.

36 Cf. Taurman/Bodington (1992), page 77; or Roach (2003), page 38.

37 Cf. Dunbar et al. (2012), pages 8 f.

38 Cf. Taurman/Bodington (1992), page 71.

39 Taurman/Bodington (1992), page 79; cf. Dunbar et al. (2012), page 9.

40 Cf. Dunbar et al. (2012), page 9.

41 Pollack et al. (2006), page 36; cf. Taurman/Bodington (1992), footnote 16, discussing the mixture of *ex ante* and *ex post* information as being flawed.

42 Dunbar et al. (2012), pages 10 f.

43 Cf. Roach (2003), pages 35 ff.; or Taurman/Bodington (1992), pages 67 and 97.

these consequential damages or mitigating factors are typically not directly quantifiable (i.e., their impact on the cash flow cannot be assessed in isolation). Consequently, the direct assessment of damages is practically limited to narrowly defined damages occurring over a reasonable, short time period.

In contrast, the indirect assessment of damages is based on a comparison of the actual with a hypothetical cash flow but for the wrongful act⁴⁴ and thus implicitly considers all financial impacts, including consequential damages and mitigating factors. However, this approach may overestimate the amount of damages by including financial impacts unrelated to the wrongful act. Therefore, one of the most important issues is to identify, to quantify and to exclude the financial implications of unrelated influences from the damages calculation to the extent possible.⁴⁵

The use of a valuation model

Practically, the choice of whether to use a rather simple or a more sophisticated valuation model is often influenced by the availability of financial and other information and the approach applied. While the direct assessment of damages lends itself to a simpler model, the indirect assessment of damages typically necessitates an integrated model.

Accordingly, a simple model may include only a cash flow projection, while an integrated financial model typically includes financial projections for the income statement, the balance sheet and the cash flow statement. The integration refers to financial and other interdependencies modelled between input parameters, calculations and results (e.g., a change in revenue resulting in an adjustment to trade receivables and thereby also to net working capital).⁴⁶

Best practice requires a financial model to distinguish between input parameter, the calculation itself and the output of results.⁴⁷ Best practice further requires simplicity as ‘more detail creates the need for more inputs, with the potential for error in each one, and generates more complicated models.’⁴⁸ This will also improve the reviewability of the financial model, thus enabling an easier understanding and assessment of the mathematical accuracy and the applicability of the financial model for the specific damages quantification.⁴⁹

In conclusion, a financial model should focus on the most important issues (i.e., the key value drivers or key financial parameters with a more than insignificant influence on the result), but at the same time should not oversimplify the reality.

44 See ‘The but-for method’, *supra*.

45 Cf. Pollack (2006), page 20.

46 Given the complexity of integrated financial models, the use of computer-based tools, e.g. a spreadsheet software, is market standard.

47 Cf. Koller et al. (2015), pages 229 ff.

48 Damodaran (2006), page 8.

49 Cf. Kantor (2008), pages 301 ff., suggesting that the arbitral tribunal should obtain the financial models.

Assumptions required to adequately use the discounted cash flow methodology in international arbitration

Introduction

The determination of a business value, as well as the determination of damages, is based on a few general but key parameters that need to be determined depending on the individual facts and circumstances (i.e., the valuation object, the valuation date and the valuation or loss period).

Once these parameters have been decided, the financial information that coincides with these decisions must be determined, including the relevant prospective financial information to be used; for example, a business plan or a financial forecast, whether or not to consider a terminal value, the applicable currencies and exchange rates, if any, and whether or not inflation needs to be considered expressly.

Upon determining the relevant cash flows, the time value of money and the riskiness of the cash flows need to be considered by calculating the present value of the cash flows through compounding of past cash flows, if applicable, and discounting of future cash flows to the valuation date.

Finally, to fully compensate for the wrongful act, the tax implications of the potential award need to be considered.

Key parameter

The valuation object

The valuation object represents the business to be valued or the damages to be assessed. The appropriateness of the result is directly dependent on a distinct and definable identification of the valuation object, considering the prerequisite of causation.⁵⁰ The more narrowly the valuation object is defined, the fewer other influences will impact the result of the calculation and, consequently, the less information and fewer adjustments will be required. Therefore, damages should be determined on the basis of the smallest entity or unit for which individual cash flows can be determined; for example, a company, a business unit, a profit centre or a product.⁵¹ The identification of the valuation object will typically involve a review of the existing internal and external financial reporting; for example, annual, quarterly or monthly financial statements, (monthly) management reporting, profit or cost centre reporting, or reporting on cost units such as products or projects.

The valuation date

As the value of businesses varies over time as a consequence of changes in the markets or the business itself, the appropriate date as of which the valuation object is to be valued must be identified.⁵² The valuation date is a technical issue, as it represents the point in time to which all past cash flows are compounded and all future cash flows are discounted⁵³ and

50 Cf. Pollack et al. (2006), pages 19 f., discussing the requirements of transaction causation and loss causation.

51 Cf. the concept of IFRS' Cash Generating Units as defined in IAS 36.6, or the similar concept of US GAAP's Reporting Units as described in the ASC 350-20-35-33 ff. of the FASB.

52 Cf. Damodaran (2006), page 5; or Galanti (2012), page 7.

53 See 'Considering an adequate discount rate', *infra*.

determines which information can, should or must be used.⁵⁴ As discussed above, a later valuation date may enable the use of more timely information, even when applying the *ex ante* approach.

The valuation or loss period

While business valuation generally assumes a perpetual valuation period, the loss period needs to consider the time from the commencement of the wrongful act until the cessation of its economic impact on the damaged party.⁵⁵ Therefore, the loss period will generally be limited, for example, by the contractual terms or the return of the business to customary levels.⁵⁶

In a breach of contract matter, the loss period will usually extend over the remaining contract term, which may include contract renewals based on an analysis of the history of renewals, considering potential negotiations prior to the breach and other facts and circumstances as a result of which a renewal could not have been avoided (e.g., a sole supplier agreement).⁵⁷

In the absence of a contractual limitation, there is a rebuttable assumption that the damaged business will return to its customary levels over a definite period of time, thus limiting the damages period.

Other than with regard to the destruction of a business,⁵⁸ damages will have a perpetual or indefinite effect only in rare circumstances. In these situations, a terminal value needs to be considered,⁵⁹ suggesting the use of the loss in business value approach.

Financials

Introduction

Determining the free cash flow to firm as a basis for the business valuation or assessment of damages requires the existence or projection of an integrated set of financial statements (i.e., an income statement, a balance sheet and a cash flow statement).⁶⁰

Furthermore, when damages extend for an indefinite time, a terminal value and a terminal growth rate must be considered.

Finally, depending on the facts and circumstances, special attention may be required with regard to currencies and exchange rates or inflation.

⁵⁴ See 'Ex-ante v. ex-post approach', *supra*.

⁵⁵ Cf. James R. Hitchner, *Financial Valuation, Applications and Models, Second Edition*, 2006 (Hitchner (2006)), page 1036.

⁵⁶ Cf. Pollack et al. (2006), page 3.

⁵⁷ Cf. Pollack et al. (2006), page 23.

⁵⁸ Cf. Kolaski/Kuga (1998), page 5.

⁵⁹ See 'Developing and reviewing terminal value and terminal growth rate', *infra*.

⁶⁰ Cf. Koller et al. (2015), pages 232 f.

Developing and reviewing prospective financial information

The income statement

Introduction

The income statement reports a business's financial performance over a specific period. It is used to assess the business's ability to produce net income for its owners. The analysis of historic income statements typically reveals relevant information to be used in the preparation or review of prospective financial information (e.g., financial ratios such as the gross margin). When assessing income statements, the accounting principles⁶¹ applied must be considered, as material deviations may exist in the way these recognise or measure revenues or costs.

Developing and reviewing revenue projections

Revenue is generally defined as the gross inflow of economic benefits arising from an entity's operating activities, such as sales of goods or services. It represents the product of the volume of goods and services sold and their corresponding prices.⁶²

The assessment or projection of revenues (or lost revenues) needs to consider the economic environment of the business (i.e., the demand for its products or services, the supply of materials, people and know-how, the type of competition and number of competitors, and potential disruptive impacts, for example, the substitution of the products or services by other products or services). Sources to identify or validate such influences are, among others, market share analyses, market studies, industry studies, analyst coverage, financial reporting of the business or its competitors, analyst coverage or information derived from the business itself (e.g., information memoranda).

Revenues (or lost revenues) are at the heart of the financial statement analysis and projection, as almost every other line item directly or indirectly depends on them⁶³ and their projection is likely 'the most controversial part of any damages estimate in a business case because it requires so many assumptions'.⁶⁴

The determination of lost revenues (i.e., those revenues 'that would have been earned but for the wrongful act')⁶⁵ is the first step in establishing lost profits. This concept aims to identify only incremental revenues and requires a careful analysis of causality to avoid both the inclusion of revenues unaffected by the wrongful act and the exclusion of revenues affected by the wrongful act. Frequently used approaches to determine lost revenues are: (1) the before-and-after method; (2) the yardstick or benchmark method; and (3)

61 E.g., International Financial Reporting Standards (IFRS), United States Generally Accepted Accounting Principles (US-GAAP) or other.

62 Cf. IAS 18, Revenue; note that the standard will be replaced IFRS 15, Revenue from Contracts with Customers, as of 1 January 2017.

63 Cf. Koller et al. (2015), page 233.

64 Allen et al. (2011), page 499.

65 Pollack et al. (2006), page 3.

reference to contractual terms.⁶⁶ Alternatively, time-series models or econometric models may be employed.⁶⁷

The before-and-after method compares a period during which the revenue is impacted by the wrongful act (loss or damages period) with a period of unaffected revenues (benchmark or base period). Importantly, the benchmark period needs to be a reliable indicator representative of the damaged party's reasonable prospects. While generally a longer benchmark period will produce more reliable observations, sometimes even a very short period (only a few months) may be acceptable. But, the unavailability of a reliable benchmark period, for example, because of a lack of a track record, renders the before-and-after method inappropriate. As the selection of the benchmark period may have a significant impact on the damages, it requires a convincing reasoning and consistent application (e.g., it should be identical for revenues and cost). The before-and-after method is considered the most reliable approach, as it relies on verifiable data rather than projections (e.g., the damaged party's accounting records).⁶⁸ The lost revenues are determined as the difference between the revenues of the benchmark period and the damages period, assuming that but for the wrongful act the same level of revenue should have been obtained. If a growth trend is observable during the benchmark period, or revenue growth is expected based on other information, the projected revenues may consider a growth rate. While typically this growth rate is derived and extended from the benchmark period, this approach may not always be suitable, especially with young businesses or in declining markets.⁶⁹ Finally, the before-and-after method requires the analysis of whether other factors, such as changes in the economic conditions (e.g., inflation, general price erosion, changes in demand, changes in competition or mismanagement of the business) have caused or contributed to the deviation of the actual revenue from the but-for revenue and to control (i.e., eliminate) these other factors to avoid overcompensation or under-compensation of the damaged party.⁷⁰ This may also involve the elimination of such factors from the actual financial data to isolate the marginal effect of the wrongful act.⁷¹ The failure to control these other factors may result in phantom losses or significantly exaggerate lost revenues, resulting in unreasonable and unjustified damages.⁷²

The yardstick or benchmark method also relies on observable information but refers to similar assets or businesses. Therefore, its use and reliability is dependent on the identification of a truly comparable business and the availability of the required information. Possible

66 Cf. Pollack et al. (2006), page 25; or EC (2013), pages 14 ff., referring to comparator-based methods.

67 Cf. Carroll B. Foster, Robert R. Trout and Patrick A. Gaughan, Losses in Commercial Litigation, *Journal of Forensic Economics* 6(3), 1993 (Foster et al. (1993)), pages 184 ff.

68 Cf. Robert M. Lloyd, Proving Damages for Lost Profits: The Before-and-After Method, 2014, University of Tennessee (Lloyd (2014)), page 1; or EC (2013), page 16.

69 Cf. James Plummer and Gerald McGowin, Key Issues in Measuring Lost Profits, *Journal of Forensic Economics*, Vol. 6, No. 3, 1993, page 232 (Plummer/McGowin (1993)); or Kolaski/Kuga (1998), page 2; and refer to 'Developing and reviewing prospective financial information', *infra*, for a further discussion on the determination of growth rates.

70 Cf. Pollack et al. (2006), pages 20 and 25 f.; or Lloyd (2014), pages 6 ff.

71 Cf. Roach (2003), page 56.

72 Cf. Jonathan T. Tomlin and David R. Merrell, The Accuracy and Manipulability of Lost Profits Damages Calculations: Should the Trier of Fact be "Reasonably Certain"?, *The Tennessee Journal of Business Law*, Volume 7, 2006 (Tomlin/Merrell (2006)), pages 303 ff.; or EC (2013), page 16.

yardsticks or benchmarks include revenue from the same business in a different geographic market, revenue projections developed prior to the wrongful act, revenues of a similar business with comparable market characteristics, sufficiently similar revenues of third parties, or industry averages. Importantly, the use of the comparable information typically involves adjustments to eliminate any differences between the valuation object and the comparable business (e.g., with regard to sales volume or geographic footprint). Finally, the yardstick or benchmark method requires controlling other factors that may have influenced the actual results of either the valuation object or the comparable business to avoid overcompensation or under-compensation.⁷³

In a breach of contract matter, the contract typically provides details for material assumptions that must be considered (e.g., the sales volume, prices, (remaining) contract term).⁷⁴

Finally, the projection of (lost) revenues must be sense-checked to ensure the reasonableness of the results. These checks may refer to external information, such as market studies, market share analysis, analyst coverage, competitor analysis or industry experts, or may use internal information, such as capacity constraints or the assessment of earlier performance, including budget-to-actual comparisons.⁷⁵

Developing and reviewing cost projections

While generally costs cover a business's gross outflow of economic benefits (i.e., the money used), the concept of avoided cost referred to in the assessment of lost profits considers only 'those incremental costs that were not incurred because of the loss of the revenue'.⁷⁶ Just like lost revenues, the 'calculation of avoided costs is a common area of disagreement about damages'.⁷⁷

In an income statement compliant with the internationally prevailing cost of sales method, the major cost categories are cost of goods sold, selling, general and administrative expenses, and other expenses.⁷⁸ The costs of goods sold reflect the costs directly attributable to the production of goods or services rendered and typically include direct labour and material costs. While they are generally expected to vary directly with revenues, they may also include fixed costs (e.g., the depreciation of machinery and equipment used in the production). Conversely, selling, general and administrative expenses, as well as other expenses, primarily include costs not directly related to revenue (e.g., compensation of officers, office supplies or vehicle costs) but they may also include costs that vary with levels of revenue (e.g., marketing spend or advertising costs).⁷⁹

The distinction between variable and fixed costs is an important aspect of the identification and quantification of avoided costs, as these do not consider fixed costs that would have been the same with or without the wrongful act.⁸⁰ The assessment of whether or

73 Cf. Pollack et al. (2006), page 26; or EC (2013), pages 19 f.

74 Cf. Pollack et al. (2006), page 26.

75 Cf. Pollack et al. (2006), page 27.

76 Pollack et al. (2006), page 3.

77 Allen et al. (2011), page 449.

78 In other formats of the income statement, e.g., the nature of expense method, the distinction between variable and fixed costs can be even less discernible.

79 Cf. Allen et al. (2011), page 450; or Foster (1993), pages 183 f.

80 Cf. Pollack et al. (2006), page 29; Allen et al. (2011), page 499; or Plummer/McGowin (1993), page 233.

not costs are variable (i.e., will change with each unit of production) or fixed (i.e., will not change irrespective of the units of production) needs to consider that almost no cost is purely variable or fixed. Depending on the level of production, some costs are fixed within certain levels but vary outside these levels (e.g., semi-variable cost). Furthermore, the length of the loss period needs to be considered, as a longer loss period will result in more costs being considered variable because they could be avoided.⁸¹ And, while some costs may vary directly with revenues, they may, nonetheless, not or no longer be avoidable; for example, costs of goods sold already incurred for finished products that cannot be delivered because of the wrongful act.⁸² Consequently, the application of the concept of avoided costs requires a thorough understanding of the damaged party's cost structure to identify the major cost drivers and other factors that may affect particular costs.⁸³ This also entails the identification and adjustment for extraordinary and other unusual costs to reflect the ordinary business activity.⁸⁴

Generally, external financial reporting will not provide a sufficient level of detail to differentiate between fixed and variable costs and, therefore, more detailed information is required on the level of individual cost categories, cost centre or cost units,⁸⁵ which will be available at varying degrees and in various formats. A thorough review and analysis of this actual cost information, typically involving monthly, quarterly or yearly cost information, as well as useful planning measures (e.g., standard costs) forms the basis for the development or review of cost expectations. Based thereon, either non-statistical or statistical methods may be applied to determine which costs vary with revenue.

Non-statistical methods include an account analysis (i.e., a review of a detailed general ledger or chart of accounts to subjectively identify variable costs); the identification of direct costs related to an activity or product (e.g., direct labour and material costs); the use of standard costs or other reports available from the damaged party; the use of ratio analysis (i.e., cost allocation in proportion to a specific measure – e.g., labour hours or unit of production); reference to industry standards (i.e., based on industry studies or comparable information); or a per cent of sales approach (i.e., the determination of a per cent quota for each avoided cost in relation to revenues). These approaches may capture incremental costs incompletely, are prone to errors and are highly subjective. Their application, therefore, requires comprehensive and reasonable documentation.⁸⁶

More reliable statistical methods⁸⁷ include regression analysis,⁸⁸ which identifies patterns in the relationship between revenues and costs, including the extent to which certain costs are influenced by revenues. In addition, the quality of the regression analysis (i.e., the predictive power of the regression model) can be back-tested to the benchmark period and statistically corroborated by an analysis of the correlation coefficient. The

81 Cf. Foster et al. (1993), page 193; or Plummer (1995), page 31.

82 Cf. Pollack et al. (2006), page 30; or Allen (2011), page 450.

83 Cf. Pollack et al. (2006), page 29; or Foster et al. (1993), page 193.

84 Cf. Damodaran (2006), pages 91 f.

85 Cf. Plummer/McGowin (1993), page 233.

86 Cf. Pollack et al. (2006), pages 30 f.

87 See the chapter on 'The Use of Econometric and Statistical Analysis and Tools' in this publication.

88 Cf. Pollack et al. (2006), page 31; Allen (2011), page 450; Foster et al. (1993), page 191; or Plummer/McGowin (1993), pages 233 f.

reasonable use of a regression analysis is primarily dependent on a sufficient number of observations (i.e., data)⁸⁹ and a thorough understanding of the business to formulate valid hypotheses. Econometric techniques may further improve the assessment but require even more information.⁹⁰

To the extent available and existent, contractual agreements will need to be considered irrespective of the approach, and may determine, for example, the purchase price and volumes for materials and services.

To assess the reasonability of the resulting costs, cost ratios may be compared internally to prior periods, other markets and other products, or externally to competitors or market information.⁹¹ In addition, the reasonability is frequently assessed by reference to margins, especially to the gross margin.⁹² This comparison, however, needs to recognise the lack of comparability, as lost profit does not equate to the definition of net income. Instead, the lost profit margin is best described as incremental profit margin (i.e., the change of net income as a result of the lost revenues). Because of its composition it should typically fall between the historic gross profit margin and historic net profit margin.⁹³ Furthermore, for longer loss periods, this incremental profit margin should decline over time, reflecting the business adjustments of the damaged party (i.e., mitigation).⁹⁴

Considering corporate income taxes

While business valuation typically considers after-tax results,⁹⁵ damages are generally determined on a pre-tax basis, assuming that any compensation will be taxed at the level of the damaged party.⁹⁶

When corporate income taxes are considered, it needs to be decided whether a marginal tax rate or the effective tax rate is applied. While the marginal tax rate can be read from the applicable tax law and assumes that the corporate income tax for the business or damages is independent from any other tax issues, the effective tax rate is determined by reference to actual financial information comparing the tax payments with the income before tax, thereby considering any company-specific tax issues.

To the extent existent, corporate income tax loss carry-forwards need to be considered to the extent they are applicable to the damaged business and could be used to offset its future tax payment obligations. Determining the timing and amount of this offsetting typically requires detailed tax planning.

A further complication may result from the business's operation in multiple tax jurisdictions. Not only will these likely provide for different corporate income tax rates, they may also define taxable income differently. Furthermore, based on local tax law or double tax treaties, international taxation will usually involve the deduction of foreign taxes or the exemption of foreign income from local corporate income taxes under certain restrictions.

89 Cf. EC (2013), pages 24 f.

90 Cf. EC (2013), page 32.

91 Cf. Pollack et al. (2006), page 32.

92 Cf. Foster et al. (1993), page 181.

93 Cf. Plummer/McGowin (1993), page 232; or Foster et al. (1993), page 181.

94 Cf. Plummer/McGowin (1993), page 235; or Allen et al. (2011), page 450.

95 Cf. Damodaran (2006), pages 92 ff.

96 See 'Considering a tax step-up', *infra*.

The balance sheet

Introduction

The balance sheet is a financial statement that captures a business's assets, liabilities and equity at a specific point in time. The review of historic balance sheets and their development over time typically reveals relevant information to be used in the preparation or review of prospective financial information (e.g., financial ratios such as the equity ratio or liquidity ratios and their development over time). When assessing balance sheets, the accounting principles⁹⁷ applied must be considered, as material deviations may exist in the way these rules recognise or measure assets, liabilities or equity.

For the valuation of a business or the assessment of damages as a loss in business value, the balance sheet, in addition to the income statement, is required as a basis on which to develop the statement of cash flows.⁹⁸ As the determination of damages as lost profits typically assumes lost revenues and avoided cost to be equivalent to cash flow, a balance sheet is not always required.

Developing and reviewing projected capital expenditures

Capital expenditure (CAPEX) refers to the use of funds to acquire or to improve the useful life of long-lived assets (i.e. assets, providing future economic benefit to the business beyond the current year or reporting period). These costs will be recognised in the income statement of the business as depreciation or amortisation over the useful life of the asset.

The analysis of past investment spending should identify and differentiate between investments for growth and investments for maintenance to assess the level of investments required to sustain the business and the related cash outflow in future periods. It should also review past patterns of investments to identify issues such as cyclicity that would require periods of peak investments.

The analysis of the financial projection should focus on whether the investment spending is in line with actual observations, or if any changes thereto are reasonable and sufficiently explained; for example, after a period of growth the business may reach a more steady state, resulting in a decline of growth investments or, conversely, the budget may consider significant growth that requires increased investment spending in the near term.

To assess the reasonability and consistency of the projected financial information, the level of long-lived assets may be compared to the level of revenue, assuming that a certain level of long-lived assets is required to deliver the business's products or services.⁹⁹ In addition, a comparison of the sales volumes required to obtain the projected revenues with the volumes of production may identify capacity constraints.

Furthermore, benchmarking against competitors or industry standards may identify inconsistencies that could indicate insufficient investment spend. This analysis should also involve an assessment of the market size (volume) and the respective market shares (volume) to ensure that sufficient capacity is available to service the expected market share of

97 E.g., International Financial Reporting Standards (IFRS), United States Generally Accepted Accounting Principles (US-GAAP), or others.

98 Cf. Brealey et al. (2012), pages 63 ff., the so-called indirect approach derives the cash flow statement from the income statement and changes in balance sheet positions.

99 Cf. Koller et al. (2015), page 244.

the business and to compare the expected growth of the market with the growth assumed for the business.

Developing and reviewing projected net working capital

Net working capital is generally defined as current assets less current liabilities at a specific point in time. It is used to assess the business's short-term financial health and its efficiency in converting products into revenue. While in practice there are numerous definitions to match the requirements of a specific business, the narrowest definition will typically entail inventories, trade accounts receivable and trade accounts payable.¹⁰⁰

To analyse actual levels of net working capital and to project future levels of net working capital, the working capital turnover ratio¹⁰¹ can be considered, which measures the utilisation of working capital to generate revenues. Furthermore, the key metrics days sales of inventory (DSI),¹⁰² days sales outstanding (DSO)¹⁰³ and days payables outstanding (DPO)¹⁰⁴ are frequently referred to.¹⁰⁵ While DSI is a measure of inventory effectiveness indicating the number of days it takes to convert inventory into revenue, DSO indicates the number of days it takes to collect the cash following the sale, and DPO indicates the number of days the business uses to pay its suppliers after the purchase or acquisition of their products or services. These metrics can be combined into the cash conversion cycle,¹⁰⁶ which indicates the length of time the cash used to acquire resources needs to be financed before cash is received from the business's operation.

The analysis of these metrics over time may indicate changes in the business (e.g., new products or markets), or in the business processes (e.g., in the introduction of a just-in-time production), or changes in the financing of the business (e.g., by extending the period before paying creditors). Significant changes will require an explanation and an assessment of their sustainability (e.g., a projected increase in working capital may result from an unrealistic assumption regarding payment terms).

Benchmarking these metrics with comparable companies or industry standards will further indicate the competitiveness of the terms and thus their likely market acceptance (e.g., a much longer DPO in comparison to competitors may not be sustainable with suppliers).

Developing and reviewing projected financing (net debt)

Net debt is generally defined as interest bearing short-term and long-term debt less cash and cash equivalents (i.e., current assets that can quickly be liquidated for cash) at a specific point in time. It indicates the business's ability to pay off its debts using its available cash and highly liquid assets.

The analysis of historic levels of net debt should indicate the level and structure of financing required to sustain the business's operations and can be used to assess the

100 These items will generally also be included in any derivation of the net working capital definition.

101 Working capital turnover ratio = Revenue / Working Capital, whereas revenue is typically for a 12 months period and working capital is the average working capital over that same period.

102 Days Sales of Inventory = (inventory / cost of sales) * 365, assuming a period of one year.

103 Days Sales Outstanding = (trade accounts receivable / revenues) * 365, assuming a period of one year.

104 Days Payables Outstanding = (trade accounts payable / cost of sales) * 365, assuming a period of one year.

105 Cf. Koller et al. (2015), pages 245 f.

106 Cash conversion cycle = Days Sales of Inventory + Days Sales Outstanding – Days Payables Outstanding.

reasonableness of financial projections. While long-term debt will typically be based on contractual agreements (e.g., loans), which should form the basis for the projection of these debt items, including a potential repayment or renewal, short-term debt is often agreed as an overdraft facility or a borrowing limit. Consequently, a financial projection needs to consider these limits.

Benchmarking with comparable companies or industry standards may identify variations of the level or structure of indebtedness and may indicate an adjustment to the debt level.

Considering special items

In addition to the above, there are special items that may be subject to discussion and potentially disagreement as their inclusion or exclusion in working capital, net debt or the valuation as such will directly impact the business value.

First, non-operating assets should be excluded from the valuation as they do not contribute to the generation of income or cash flow in the normal course of operations (e.g., an investment into unused land). If required, these assets should be valued at their fair value as of the valuation date and added to the business value.¹⁰⁷ But, in the context of determining damages, these assets will usually be unaffected by the wrongful act and thus their consideration is not required as their value will be equivalent in both the but-for and the actual scenario.

Second, while cash is generally directly assessable, there may be circumstances that require special attention. Trapped cash is cash on the balance sheet that is not available for use in the business or distribution to its owners, as it is designated for some other purpose (e.g., as a collateral or fiduciary deposits). Also, sometimes there is a discussion of the level of cash required to operate the business,¹⁰⁸ which, if one agrees with this concept, would not be available for use in the business or distribution to its owners, thereby reducing the value of the business.¹⁰⁹

Third, financial instruments may require a thorough analysis to determine whether or not they are financial assets or liabilities and what their impact is on the future net cash generation.

Fourth, debt-like items (i.e., items that will result in future cash outflows and typically bear interest) are frequently subject to disagreement and dispute as the inclusion or exclusion within net debt will directly result in different business values. Examples of debt-like items are, among others, pension accruals, which reflect the future pension payments to then former employees and are recorded on the balance sheet at their present value, capital leases or environmental contingencies.

¹⁰⁷ Cf. Koller et al. (2015), pages 149 and 247.

¹⁰⁸ Cf. Koller et al. (2015), page 140.

¹⁰⁹ See 'The Discounted Cash Flow Methodology: Introduction', *supra*.

The cash flow statement

The cash flow statement is a financial statement that provides information about cash receipts and cash payments of a business during a specific period to, among others, support the assessment of the business's ability to generate future net cash flows.¹¹⁰

It usually distinguishes between the cash flows from operating, investing and financing activities. The cash flow from operations resembles the main revenue-producing activities of the business that are not investing or financing activities (i.e., the production and sale of products or services). The cash flow from investing activities depicts the amount of cash invested in the purchase of, or received from the sale of long-lived assets.¹¹¹ The cash flow from financing activities¹¹² provides information about the funding of the business by both equity and debt investors.¹¹³

For the valuation of a business or the assessment of damages as a loss in business value, the cash flow statement is typically derived from the projected income statement and balance sheet.¹¹⁴ The analysis of the actual or historic free cash flow to the firm may provide support in assessing or reviewing the reasonableness of the projected free cash flow to the firm.

Otherwise, the determination of damages as lost profits typically does not require the preparation of a statement of cash flows in full compliance with the applicable accounting standards but will focus directly on the cash flows derived from lost revenues and avoided costs.

Developing and reviewing terminal value and terminal growth rate

The terminal value represents the present value of all future cash flows at a specific point in time. To consider a stable growth of these cash flows a terminal growth rate is applied (perpetual growth model).¹¹⁵

When the valuation or damage period is not limited (i.e., infinite), the detailed planning period¹¹⁶ must be extended to consider what is known as a 'terminal year'. The terminal year represents the income or cash flow expected for every year after the detailed planning period and thus, utilising the present value of an ordinary annuity,¹¹⁷ captures the value of the business for all periods beyond the detailed planning period. As the terminal value frequently contributes the majority of the business value, its determination requires caution and should be based on reliable assumptions.¹¹⁸

110 Cf. Statement of Financial Accounting Standards No. 95, Statement of Cash Flows, para. 4 f.

111 See 'Developing and reviewing projected capital expenditures', *supra*.

112 Note that interest expenses related to financial debt can be included either within the cash flow from financing or the cash flow from operations in compliance with IFRS, whereas it is included within the cash flow from operations in compliance with US-GAAP.

113 Cf. Statement of Financial Accounting Standards No. 95 or Statement of Cash Flows and International Accounting Standard 7, Statement of Cash Flows.

114 In contrast to this so-called indirect cash flow method, the so-called direct cash-flow method is based on an identification and allocation of transfer of funds.

115 Cf. Koller et al. (2015), pages 229 f.

116 See 'The valuation or loss period', *supra*.

117 An ordinary annuity is a series of equal payments made at the end of consecutive periods.

118 Cf. Koller et al. (2015), pages 259 f.

First, the business should be in a steady state at the end of the detailed planning period – i.e., no major changes or disruptions should be expected for the business or its environment as these could not be captured in the terminal year. Accordingly, to the extent such events and circumstances are known or foreseeable, they must be considered in an extended planning period prior to the terminal year.¹¹⁹

Second, it is generally assumed that a business will grow over time. The growth rate can have a major impact on the business value and must therefore be determined very diligently. To determine a reasonable growth rate the historic development of the business, its competitors and its markets should be considered. In addition, fundamental data like long-term inflation forecasts or projected growth of the relevant economies, e.g. GDP forecast, should be considered. It seems reasonable to argue that '[a] company's growth rate typically approaches industry growth rates very quickly, and few companies can be expected to grow faster than the economy for long periods.'¹²⁰

Practically, growth rates vary significantly, depending on the geography's economic outlook or the business' industry outlook, among others. For developed countries, the growth rate will typically be lower than the expected inflation rate, assuming that in mature markets the business will not be able to pass on the entire cost increase to its customers.

The financial projection should consider that growth requires investments, specifically in long-lived assets and net working capital, which in turn require financing.¹²¹ An integrated financial model will consider these requirements which will reduce the free cash flow and thus the business value.

Common pitfalls in the use of the growth rate include the wrongful application of the growth rate to all line items of the income statement individually, thereby ignoring the relations of revenues, and an understatement of growth resulting from an overly conservative perception of uncertainty.¹²²

Considering currency and exchange rates

A business value as well as damages needs to be determined in a specific currency. Therefore, financial projections denominated in another currency need to be converted applying an appropriate exchange rate.

Theoretically, the most precise approach would be to translate all foreign currency transactions with the exchange rate at the date of the transaction. In practice though, balance sheet items are typically converted applying the exchange rate as of the date of the balance sheet, while income statement items are converted applying an average exchange rate for the period covered.

For the conversion of cash flows, two methods are commonly applied: the forward-rate method or the spot-rate method. The forward-rate method uses forward exchange rates to convert the projected cash flows from foreign to domestic currency. Accordingly, the discount rate applied must consider domestic cost of capital. In contrast, the spot-rate method converts the present value of the projected foreign currency cash flows into a domestic

119 Cf. Damodaran (2006), page 153; or Koller et al. (2015), page 542.

120 Koller et al. (2015), page 263; cf. Damodaran (2006), page 146.

121 Cf. Damodaran (2006), pages 148 ff.

122 Cf. Koller et al. (2015), pages 271 ff.

present value applying the exchange rate as of the valuation date. Consequently, the discount rate applied must consider the foreign cost of capital. Both approaches are broadly accepted, but the consistent use of the appropriate discount rate must be ensured.¹²³

Considering inflation

Inflation is defined as an increase in the price level of goods and services in an economy and is measured by the inflation rate, generally the annual percentage change in consumer prices.¹²⁴ Generally, valuation as well as damages assessment implicitly considers inflation (i.e., the financial forecast includes any potential adjustment for expected inflation and thus inflation must not be considered separately).¹²⁵ But, in instances of very high and unstable inflation, or even hyperinflation (i.e., an extremely rapid or out of control inflation in excess of 50 per cent per month), inflation must be considered separately.¹²⁶

Considering an appropriate discount rate

To consider the time value of money and the specific risks associated with the business, when applying the DCF methodology, the free cash flow to the firm is compounded or discounted to the valuation date applying an appropriate discount rate.¹²⁷ The same principles apply to the determination of damages; i.e., past and future lost profits or cash flows are compounded or discounted to the valuation date applying an appropriate discount rate,¹²⁸ which may significantly differ from the discount rate appropriate for the valuation of a business. The appropriate discount rate is usually a matter of substantial dispute.¹²⁹

While there are many approaches to determine the appropriate discount rate, depending on the cash flows to be discounted, the concept of WACC is the most commonly used methodology and enjoys broad acceptance.¹³⁰

Sometimes, risk adjustments in addition to the risk premium already captured within the WACC are discussed to reflect facts and circumstances specific to the market or the valuation object; for example, a country risk premium, a small firm premium or an inflation premium.

The country risk premium is usually derived from a comparison of two countries' bond rates (i.e., as a country bond default spread). It considers the additional risk that a specific country with an immature market may present in comparison to the mature markets from which the financial information to determine the WACC has been derived; for example, a WACC based on US-listed companies is adjusted to reflect the different risk of an

¹²³ Cf. Koller et al. (2015), page 490.

¹²⁴ Cf., for example, U.S. Bureau of Labor Statistics, on www.bls.gov.

¹²⁵ Cf. Allen et al. (2011), pages 451 ff. for further discussion.

¹²⁶ Cf. Damodaran (2006), page 36.

¹²⁷ Cf. Damodaran (2006), page 10.

¹²⁸ Cf. Pollack et al. (2006), pages 35 ff.; or Robert L. Dunn and Everett P. Harry, Modeling and Discounting Future Damages, *Journal of Accountancy*, January 2002 (Dunn/Harry (2002)), page 3.

¹²⁹ Cf. Allen et al. (2011), page 500.

¹³⁰ Cf. Koller et al. (2015), page 148; or Pollack et al. (2006), pages 35 ff.; see the chapter on 'Determining the Weighted Average Cost of Capital' in this publication.

investment in an emerging country with little historical data or data too volatile to yield a meaningful estimate of the risk premium.¹³¹

Some empirical studies indicate that the capital asset pricing model,¹³² which is used to determine the equity risk premium within the WACC, may understate the more volatile returns of small firms. A small firm premium is discussed to consider the additional risk or the additional return an investor would require when investing into a smaller firm than those included in the determination of the WACC components (i.e., stock-listed companies). While this premium is regularly applied in the valuation of privately held businesses, its existence is seriously questioned.¹³³

When expectations with regard to inflation rates differ between the market used to derive the risk premium included in the WACC (e.g., the United States) and the market in which the valuation object operates and generates cash flows (e.g., an emerging country), an inflation premium may be used to bridge the gap between expected inflation rates.¹³⁴

Considering a tax step-up

Compliant with the objective of full compensation and its assessment on the basis of after-tax free cash flow available to the damaged party, the tax implication of receiving a damages award needs to be considered to avoid double taxation.¹³⁵

In case of an after-tax analysis, as commonly applied in business valuation and the determination of a loss in business value, the award should, therefore, include both the present value of the after-tax cash flows and the taxes payable on the award.¹³⁶ In contrast, since lost profit damages are generally taxable as ordinary income, these damages should be determined on a pre-tax basis.¹³⁷

For lost profits, a commonly used approach to calculate pre-tax damages is to apply the after-tax discount rate to the pre-tax cash flow.¹³⁸ However, this approach will only produce the correct damages when the corporate income tax rate applicable to the lost profits is identical with the corporate income tax rate used in the taxation of the award. This prerequisite may not be fulfilled as a result of changes in tax law¹³⁹ (e.g., changes of the corporate income tax rate, or different corporate income tax rates applicable in different tax jurisdictions). For example, income and cash flow may be generated and subject to corporate income tax globally at various corporate income tax rates while the claimant resides in a specific country, resulting in the damages award being taxed at the corporate

131 Cf. Damodaran (2006), pages 41 ff.

132 Cf. Pollack et al. (2006), pages 38 ff.; or Allen et al. (2011), page 459.

133 Cf. Damodaran (2006), page 57.

134 Cf. Damodaran (2006), page 61.

135 Cf. Robert P. Schweihs, *Measuring Lost Profits Economic Damages on a Pretax Basis*, *Dispute Resolution Insights*, Summer 2010 (Schweihs (2010)), page 11; see the chapter on 'Taxation and Currency Issues in Damages Awards' in this publication.

136 Cf. Schweihs (2010), page 10.

137 Cf. Merle Erickson and James K. Smith, *Tax Treatment of Damages Awards*, in *Litigation Services Handbook – The Role of the Financial Expert*, Fifth Edition, 2012 (Merle/Smith (2012)), page 1; Pollack et al. (2006), page 43; Allen et al. (2011), page 449; Schweihs (2010), page 10; or Hitchner (2006), page 1041.

138 Cf. Pollack et al. (2006), page 43; or Schweihs (2010), pages 12 f., including a numerical example.

139 Cf. Schweihs (2010), page 13.

income tax rate applicable in that country. In these circumstances, the after-tax present value of damages need to be grossed up, utilising the corporate income tax rate applicable to the damages award.¹⁴⁰

Documentation required to support the results of the discounted cash flow methodology in international arbitration

Documentation is an essential part of determining damages in international arbitration, as ultimately, the arbitral tribunal should be provided with sufficient evidence for its evaluation of whether the damages have been substantiated with reasonable certainty.¹⁴¹

To establish reasonable certainty, an opinion should be based on the use of an accepted methodology, on its reliable application to the facts and circumstances of the matter, and on sufficient, reasonable and unbiased source data, facts and assumptions.¹⁴²

As discussed above, the discounted cash flow methodology is widely used and accepted.¹⁴³ Furthermore, it can be reliably applied to the measurement of damages in international arbitration.¹⁴⁴

Therefore, the acceptance of the damages assessment primarily depends on a complete documentation of the source data and facts, reliable evidence for the assumptions used and a comprehensible explanation of the analysis and calculations employed. Sources reasonably referred to in damages measurement include, but are not limited to, official government publications and databases, independent researches and studies, audited financial statements and company filings, accounting records maintained in the ordinary course of business, management reports prepared in the ordinary course of business or documents produced for the arbitration.¹⁴⁵

140 Cf. Pollack et al. (2006), page 43; or Schweihs (2010), page 10.

141 Cf. Pollack et al. (2006), page 3; for discussion of the 'reasonable certain' criteria refer to AICPA, Forensic & Valuation Services Practice Aid, Attaining Reasonable Certainty in Economic Damages Calculations, 2015 (AICPA (2015)); or Robert M. Lloyd, The Reasonable Certainty Requirement in Lost Profits Litigation: What It Really Means, University of Tennessee, 2010 (Lloyd (2010)).

142 Cf. Pollack et al. (2006), page 57.

143 See 'The discounted cash flow methodology', *supra*; cf. Allen et al. (2011), page 431.

144 See 'Application of the discounted cash flow methodology to the assessment of damages in international arbitration', *supra*.

145 Cf. Allen et al. (2011), page 484.

Appendix 1

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Alexander Demuth, co-head of Alvarez & Marsal's international arbitration group and leader of its German disputes and investigations practice, is a managing director based in Munich and Hamburg. He specialises in advising clients in arbitration, litigation and out-of-court settlement with a focus on post-merger disputes and commercial disputes. Alexander has acted as party-appointed or tribunal-appointed expert in international arbitration proceedings under DIS, ICC, ICSID, SIAC and VIAC rules as well as in litigation proceedings. His experience covers various industries, including automotive and automotive supply, pharmaceutical, conventional and renewable energy, biotechnology, manufacturing, private equity, retail and software. A German national, Alexander is fluent in German and English and has issued reports and testified in both languages. Alexander is a German Certified Public Accountant (*Wirtschaftsprüfer*) and has earned his master's degree in economics from the University of Passau. He is a member of the German Institute of Public Auditors, the American Institute of Certified Public Accountants (AICPA), the AICPA Forensic and Valuation Services (FVS), the German Institution of Arbitration (DIS), the Vienna International Arbitration Centre (VIAC) and the Swiss Arbitration Association (ASA).

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