§ 9. Calculating and Presenting Quantum in International Arbitration Practice; With an Emphasis on Construction Disputes

-The expert’s perspective-

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Introduction

In making their legal findings and deriving their awards of compensation, arbitral tribunals in international arbitration cases very often rely on expert witness evidence adduced by the parties. With an emphasis on construction claims, this brief article provides commentary on the quantification of amounts claimed and, also, explains the importance of a claim’s clear presentation to the arbitral tribunal.

This article also provides a practical summary of the role and obligations of an independent expert witness in an international arbitration case. This article is co-authored by Geoffrey Senogles, an accountant with many years of experience acting as an expert witness in international arbitrations, and Julie Raneda, a lawyer specialising in international arbitration, with experience in construction-related matters. The present article thus addresses the expert on quantum’s role and challenges

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through the eyes of the expert and the counsel/arbitrator in international arbitration. For simplicity, the article consistently takes the contractor’s perspective in presenting and supporting a claim for losses.

I. The Importance To Direct Special Efforts To Your Client’s Loss Calculations

A. The Necessity Of Quantum Expert Evidence In Construction Disputes

If there is any doubt in the reader’s mind as to this reality, then just ask any lawyer who sits as an arbitrator – whether as sole arbitrator or as a member of the arbitral tribunal. Lawyers, sitting as arbitrators, understand the crucial need to capture with absolute clarity not only the parties’ legal arguments but also their financial consequences. It therefore follows that a party’s legal team needs to work closely with the appointed quantum expert to present clear, internally consistent arguments and their associated calculations.

As in other sectors, and not just in construction claims, counsel will naturally focus on the contract and the legal issues arising. These legal issues can often be numerous and complex, and will occupy most of counsel’s mind. In particular due to their different professional backgrounds, lawyers sometimes seem reluctant to enter the realm of quantum, at least tend not to prioritise tackling valuation issues.² This – some may say natural – tendency must be fought with ardour, and, for the sake of lawyers, with the help of experts. While it is often impossible to determine the exact quantum at the very beginning of the arbitration proceedings, the search and retention of the appropriate expert(s) should be one of

² One often finds determination of quantum set out in vague terms in the notice of arbitration, such as “[d]etermination and quantification of the claimant’s heads of loss will be done during the further course of these proceedings” or “[t]he claimant’s loss amounts to several hundred thousand millions of dollars”. This is partly due to the fact that under most arbitration rules, the notice of arbitration can be filed with only a rough estimate of the claimant’s quantum, the claimant reserving a more precise calculation of its claims for its subsequent submissions.
the lawyer’s and client’s priorities, as early as when contemplating a potential arbitration. Issues of quantum thus need to be addressed by specialists with different, but complementary, professional expertise, in the very early stage of the arbitration. This advice stems from a simple truth: the best legal arguments will not help the client’s case, if the quantum calculations and presentation are neglected.\textsuperscript{3}

The task is particularly arduous in construction cases, where proof of quantum is often a highly technical undertaking. Parties thus rely upon expert evidence that demands technical expertise. Often, expert evidence from several interlocking fields of expertise is required to respond to the case facts so as to provide a sufficient basis for the arbitral tribunal to make a finding and make an award of financial compensation. The proof of quantum in construction claims faces particular challenges, including for example:

\textbf{Volume of documentation}

In construction, a contractor’s record keeping obligations and standard practices are typically extensive. Since it is necessary to substantiate and support contractual claim assertions and their computations, a rigorous approach to documentary evidence is a requirement in order to submit a robust claim by a contractor. It therefore follows that, for the quantum expert, the tasks to identify, collect, review and manage relevant documentation and information can often be onerous, time consuming and hence expensive in terms of professional fees and document management costs. Documents must be managed throughout the case; from preparation and initial assessment stage, through to the conclusion of the hearing on merits.

\textsuperscript{3} Sometimes lack of substantiation and/or supporting evidence of the quantum can lead to a complete rejection of the claims, even if the claimant prevails on liability.
Multiple claims

Construction arbitrations almost systematically involve multiple claims, such as variations, claims for disruption, claims for defects, claims for unpaid works, etc. Each of those claims must be assessed on its own, and independently from the others. This feature of construction arbitration can trigger a significant amount of work for the legal team and expert. This is also a time-consuming exercise, without mentioning the practical difficulties in assessing the sometimes overlapping claims.⁴

Multiple parties

Readers of this article will be familiar with major construction projects involving multiple parties – parties that are potentially related, subsidiary companies.

The disputed project can be a multi-contract transaction involving multiple parties from different industries and jurisdictions. Further adding to the complexities is the possibility that the contracting parties may also include several subsidiaries of a single group – registered in various jurisdictions – potentially resulting in intra-group accounting and profitability issues.

Taking the perspective of a contractor making a claim for compensation, for an arbitral tribunal to find in your favour, the tribunal needs to:

1. Understand the factual circumstances of the case and accept your legal arguments, in order to make its findings on liability;
2. Understand your financial claim, in particular, your chosen methodology and calculations; and
3. Be satisfied that losses claimed have met the applicable standard of proof, demonstrating the importance of evidence and supporting documentation.

⁴ See Infra, Elliott Geisinger, Calculating and Proving Quantum in Arbitration Practice – The Lawyer’s Perspective, Section 1.2.
Once acquainted with the facts and the legal issues of the case, the quantum expert will focus on the last two aspects described above, i.e. the expert will work on presenting methodology and calculations, in order to assess the losses, with all necessary supporting evidence.

B. The Standard Of Proof And Its Resulting Obligation: Providing Adequate Supporting Documentation

A critical aspect a contractor must keep in mind is that the legal burden of proof is on the claimant and therefore, any claim asserted needs to be supported up to the required standard. The standard of proof is usually one of “sufficient to convince the court”. In other words, the objective is to convince the arbitral tribunal that the loss claimed is reasonably likely to have occurred.

In this respect, and so as to dispense with a potential maze of complicating assumptions that would otherwise need to be quantified in their report, the quantum expert will typically be instructed by counsel to assume that liability and causation are established.

Nonetheless, construction claims are relatively evidence-heavy: It can reasonably be expected for voluminous documentation to be made available in support of loss amounts claimed by a contractor. As already contemplated above, compared to projects in other business sectors, a professional construction project will typically generate a great deal of contemporaneous paperwork in terms of its planning, contracts, approvals, procurement, variations, monitoring, completion and accounting. Regardless of any other factors, in all cases, documents filed in support of claim calculations must have three features: They must be sufficient, reliable and relevant evidence. In that respect, spreadsheet summaries produced by the contractor’s staff are unlikely to be regarded as fulfilling those three criteria. Thus, the expert must, as with all such questions, in the first instance refer to the contract for agreed forms of proof required in a dispute.

For more details on this topic, see supra note 4.
Forming and expressing a view on the ‘sufficiency’ of evidence disclosed is, of course, a matter of opinion for the expert; whereas, it is for the arbitral tribunal to make a finding on all evidentiary issues. In the context of this article, it is submitted that for evidence to be found to be ‘sufficient’, the contractor needs to identify and disclose the full extent of documents (whether in paper or electronic format) that can reasonably be expected to have been prepared in the normal course of business to support or authorise a financial or legal transaction. It therefore follows that the extent, nature and volume of evidence reasonably will vary on a case by case basis (and indeed even on a transaction by transaction basis).

In the authors’ opinion, evidence presented or referred to by an expert as an exhibit should aim, wherever possible and relevant, to be:

- Third-party generated;
- Contemporaneous;
- A document, capable of being separately identified and submitted/transmitted;\(^6\)
- Original;
- Relevant;
- Translated into the language of the proceedings – as per the contract or the procedural rules agreed between the parties and the arbitral tribunal.

As a general, and rather obvious point, the evidence needs to make sense and clearly support the point made, or the data being used, in the expert’s report. In this respect, a key aspect is that the evidence be ‘contemporaneous’ – since the records are generated at the time of the activity and not in contemplation of any specific legal dispute.

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\(^6\) As per the International Bar Association’s 2010 “IBA Rules on the Taking of Evidence in International Arbitration”, a document means “a writing, communication, picture, drawing, program or data of any kind, whether recorded or maintained on paper or by electronic, audio, visual or any other means”. 

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In practice, an arbitral tribunal often requires a contractor to prove each head of claim by reference to relevant and contemporaneous evidence; in this respect, it is sufficient to satisfy the burden of proof. For example, such proof will be required to satisfy the contractor’s assertion that the actual amounts spent exceeded the planned amounts (taking into account any variations or similar circumstances) – as per the project planning records.

To support the quantum, or monetary value, of each claim, a contractor should expect, and be ready, to provide detailed records of costs (*i.e.* planned v. actual) applicable to each relevant event, task or period. The level of granular detail that can be requested by the employer can be extremely challenging for the contractor. The first challenge encountered in responding to such requests is to identify the document or record that sufficiently supports the asserted amount – and also ensure that this covers the evidentiary request.

This is sometimes easier said than done.

Of course, the primary purpose of a comprehensive formal system of accounting, legal and technical project management documentation is the efficient and accurate execution of the built project, *i.e.* according to specification, on budget and on time. However, for the quantum expert appointed by the contractor, this project documentation becomes the essential foundation upon which the loss methodology and calculations are built.

Once the appropriate type of record has been identified, the contractor (and its quantum expert and legal team) is required to collect, collate and organise all the necessary records that collectively serve to support the entire amount claimed. This brings the need for a very well organised document management system – encompassing electronic and hard copy records. Increasingly in large scale project claims, security protected virtual data rooms are being used to facilitate document management. Specialist firms serve this need; and many consulting and law firms also provide such facilities to their clients.
C. Methodology

The quantification of losses claimed will rely upon a sound comparison between planned outcome and actual outcome. This basic tenet remains the same whether the relevant outcome is represented by revenue, costs or profits.

With the goal of the arbitral tribunal’s easy understanding in mind, the valuation or calculation methodology adopted by the expert should be explained in the report. This is particularly so when an expert decides to use a different methodology than that of the opposing party’s expert; and in such cases it is very useful that any differing methodologies or approaches used be identified or highlighted to the arbitral tribunal. The arbitral tribunal really does need to know and understand the reason(s) for the differing choices by experts.

Unexplained different methodological choices – sometimes highlighted, occasionally obfuscated – can be the cause of real frustration to some highly experienced arbitrators. It is the expert’s duty to identify and explain different methodological choices. As a generic example, one expert presents an expropriation valuation as at a particular date while the other expert presents a loss of contractual profits as at a different date. In such circumstances, both experts will present discounted cash flow models but the differing approaches can lead to starkly divergent calculations of the loss.

In some circumstances, the value of the divergence between losses calculated may be sufficiently large that it becomes a worthwhile exercise to illustrate the distinct components of the overall difference; where each individual component is a separately identifiable difference in approach. The resulting bridge or gap analysis can allow the arbitral tribunal (and indeed, counsel) to decide which heads of claim or which reasons for the divergence demand more or less time to be argued and examined in

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7 This quantification of losses comparison is the pendant of the legal test which aims at placing the aggrieved party in the situation in which it would have been but for the breach. See supra note 4.
the hearing. This can be a tool an arbitral tribunal can use to increase efficiency in their deliberations.

D. Construction Costs: A Multifaceted Dimension

Apart from document management, the variety of costs involved in construction cases often present calculation challenges to quantum experts appointed by contractors. Costs in construction disputes typically include the following:

1. Direct costs: Allocating extra costs incurred to the specific claim event. The challenge here is to satisfactorily identify extra costs recorded as being over and above the project plan level, and also as being demonstrably attributable to the specific event at the heart of the arbitration.

2. Project overheads: Allocating overhead costs to the claim event that are not directly attributable to any specific contract item or task, but nevertheless represent the cost of delivering essential support functions to the overall project. The allocation must be seen to use a reasonable and rational basis.

3. Staff costs: Identifying those [additional] staff costs that can be directly attributed, with support, to the specific claim event.

4. Head office overheads: Allocating head office overheads to the specific claim event on a basis that is seen to be reasonable and rational. The expert would need to consider the project’s normal overhead allocation methodology.

5. Profit margins: Establishing a reasonable gross or net profit margin that, but for the claim event, would have been earned on the contractual project. The derivation of a reasonable profit margin is discussed later.

It is commonly the case that contractor and counsel will advise the quantum expert as to which categories of costs have been impacted by the employer’s disputed acts or omissions. An experienced quantum expert will recognise that due to project knowledge, a well organised, ex-
Experienced contractor will have clear views on the specific line item costs impacted. Whilst it may not be immediately apparent as to the extent of the impact, it will very often be known which costs were impacted. It is then the role of the quantum expert to carry out detailed reviews and analysis sufficient to quantify (and support) attributable additional costs.

**E. Specific Circumstances Impacting Quantum Evidence**

It is important to account for all relevant circumstances prevailing when quantifying additional costs incurred directly attributable to the disputed event(s). Any circumstances that may have had an effect on an otherwise straightforward comparison of planned costs and actual costs should be recognised and accounted for.

Examples of prevailing circumstances to consider when quantifying additional costs include:

- Employer’s variations
- Employer interference
- Site conditions
- Site access
- Delays, time extensions (agreed or otherwise)

When relevant, the calculation of delay cost impacts is best supported by use of critical path analysis. The specialist area of delay analysis is served by specialist consultants and consulting firms who can work alongside the quantum expert to create a robust assessment of additional costs. Such analysis can be particularly compelling when it can be demonstrated that critical path analysis was routinely used in the normal course of the contract project’s planning and execution.

This delay analysis issue brings attention to an aspect of the quantum expert’s role that may not be immediately obvious – that of
interacting and collaborating with appointed expert witnesses in other professional disciplines. In some cases, the quantification of losses to be claimed can require the interlocking opinion evidence of several experts. As part of a strategy to undermine credibility, it is an often used tactic of cross-examining counsel to tempt an unsuspecting accountant to opine on matters of highly technical (i.e. non-financial) nature. Experienced quantum experts will appoint subject-specific experts to cover the critical technical issues.

In this way, the quantum expert, and ultimately the arbitral tribunal, is able to rely on expert evidence of appropriately qualified and experienced professionals in each of the relevant and necessary niche areas on a case-by-case basis. This allows for an expert witness to provide opinion evidence that genuinely assists the arbitral tribunal to make informed findings.

In circumstances where contractual claims are asserted for loss of profits having been incurred on other construction projects lost (often described as ‘foregone’ claims), then the profit margins adopted in the claim calculations need to be evidenced by way of documents and should be seen to be reasonable.

Types of evidence (commercially highly sensitive) that can be suitable in such circumstances may include:

- Tenders for similar projects, and in particular, the internal computations of the tendering contractor setting out tender price, costs, overheads and resulting profit margin.
- Detailed internal business forecasts maintained by the contractor’s finance department as part of the normal course of management. Such (contemporaneous) forecasts will demonstrate profit margins as forecast on similar projects (unrelated to the contract project in dispute).
- Previous comparable project outcomes by the contractor. Where such projects are 1) comparable and 2) proximate in time, their actual profit performance can be difficult to dis-
pute. The probative value of such previous project results will be enhanced, when possible, if having been subject to audit by statutory auditors.

- Sector profit margin norms; particularly if the data is observed by reputable, independent sources and thus can be cited from published research.

II. One Step Further: The Importance To Direct Special Efforts In Presenting The Client’s Loss Calculation To The Arbitral Tribunal

A. “One document too many”

It is one step to derive technically sound methodologies and computations, but quite another step to be able to present the expert evidence in such ways that the arbitral tribunal understands, accepts and makes a finding based thereon. Arbitral tribunals hearing construction cases can easily become overwhelmed by facts, figures, plans and charts – let alone the files of legal submissions, reports and contractual papers. Hence, the key facts and associated figures need to be clearly identified, explained and presented.

The expert’s primary goal in reporting and presentations is to provide clarity to the arbitral tribunal and facilitate understanding. In the authors’ experience, an arbitral tribunal comprised of highly experienced, intelligent (and busy) lawyers, will very much appreciate the presentation of expert opinion evidence that emphasises clarity of communication rather than being ambiguous or overly complex in its word choice and presentation of data or analysis.

To facilitate understanding must be the expert witness’ first goal.

Therefore, when an expert takes the trouble to present complex and voluminous analysis, data and calculations in an easily digestible way, then this at least gives the arbitral tribunal the ability to make genuinely
informed findings. Of course, by achieving this initial requirement, it does not follow that the arbitral tribunal will inevitably agree and accept the expert’s opinion evidence. However, it is uncontroversial to state that, without first understanding opinion evidence, it is much less likely that an arbitral tribunal will accept and agree with that evidence.

**B. Practical Tips To Facilitate The Arbitral Tribunal’s Task**

The authors suggest that three key criteria should be central to the effective presentation of losses to an arbitral tribunal: Clarity, evidence and support.

First, the expert witness report should seek to relegate heavy data and analysis to appendices. In this way, the report can be streamlined to focus on narrative, key opinions, a description of methods, evidence and, in quantum opinion, the calculation of results.

Second, there exists a large volume of useful reference material for an expert witness to draw upon for guidance as to how to carry out their work. By way of example, it is useful for an active expert witness to keep themselves up to date with relevant legislation, guidance on professional ethics and best practice. An example source of information is the Academy of Experts, which offers a combination of formal training, membership accreditation, informative seminars and many useful publications\(^8\) – such as the Academy’s ‘Model Format Expert Report’. The model formats are generic – consistent with the Academy’s role as being a society with members active in a wide range of professional fields – and are applicable in different types of legal proceedings, litigation, mediation and arbitration alike. While the standard report formats may not suit every expert’s taste or requirements, the basic headings and contents are a useful guide or checklist for experts, and also for those instructing them.

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\(^8\) One of the authors, Geoffrey Senogles, has been an accredited member of the Academy of Experts (MAE) since 1999. The Academy, based in Gray’s Inn, London, maintains an extensive website which includes useful documents, available for download, relating to expert witnesses in international arbitration: www.academyofexperts.org
Third, graphical illustration of data can be extremely useful and aid understanding of the context of, or trends within, the data. However, whilst keeping focus on the effective presentation of expert evidence, care is needed so as to avoid misrepresenting the intended message to be conveyed.

By way of illustration, the two graphs below show precisely the same data:

Source: CRA analysis
The starkly different impressions given by the two trend lines and the impact on annual profits reported, demonstrates the real care needed when reading, interpreting and, indeed also when constructing graphical representations.

C. Oral Presentation By Experts

With the consent of the arbitral tribunal, counsel can make arrangements for their client’s party-appointed expert to make a presentation in relation to quantum evidence with accompanying slides – typically, in place of direct examination, or examination in chief. In the authors’ experience such a presentation should run for a maximum of 30-45 minutes, with a slide deck showing the following suggested content:

- Key tables
- Key graphs
- Critical points, instructions, assumptions, methodologies
- Summary of main calculation results
- Summary of main opinions

The repeated use above of qualifiers, ‘key’, ‘critical’ and ‘summary’, is intended to emphasise that it is incumbent on the expert witness to present only those few essential pieces of information necessary for the arbitral tribunal to receive and understand so as to allow it to make a finding on the opinion evidence submitted.

As a result, it is an important (and sometimes time-consuming) part of the expert’s task to make real efforts to present evidence on quantum in a logical and clear format and wherever necessary, comprehensive footnotes to sources, exhibits and appendices should be included.

No new data, evidence or opinions should be included on the presentation slides. Their contents must merely represent a précis of the expert’s own report(s) key assumptions, opinions and conclusions, which have been filed already with the Tribunal and in the record. Often, but not always, for confirmation purposes, counsel for the opposing party
will request sight of the expert’s slide deck the day before presentation. At a minimum, and without exception, in our experience whether or not screen facilities are made available in the hearing room, hard copy slides are required for distribution to members of the arbitral tribunal, including the secretary to the arbitral tribunal, stenographers and parties’ representatives present and also of course, for the record.

In our experience, the slides generally do not refer to contents of the joint experts’ written statement, if any, since this is a separate (jointly prepared and signed) document filed and on the record. The two authors of this article have differing experiences of the timing of meetings of experts; which perhaps serves to illustrate the degree to which an arbitral tribunal, counsel and the parties are able to control and tailor the pace, content and order of their case’s procedural timetable.

III. Independent Status Of The Party-Appointed Expert Witness

Before concluding, one more important issue should be referred to, if only briefly given the main focus of this article.

The ‘party-appointed’ expert is normally engaged by the party or its lawyers, is paid by the party and provides opinion evidence (written and oral) to the arbitral tribunal.

Within this set of relationships, however, it may not be immediately apparent to a contractor unaccustomed to international arbitration proceedings that the role of the expert witness to the arbitral tribunal is to provide independent, professional opinion evidence on matters within the expert’s field of expertise. To require opinion that is deemed professional is most likely to be expected but, for the expert to be required to be independent sometimes comes as a surprise to a client grappling with arbitration for the first time.

Arbitral tribunals require each expert to affirm in writing that the opinion evidence represents their honest and independent belief. For
example, a statement affirming the truth and the independence of the expert’s written evidence is a requirement of the International Bar Associations’ 2010 “IBA Rules on the Taking of Evidence in International Arbitration.”

As referred to above, the Academy of Experts provides template declarations of truth and independence, suitable for a range of legal proceedings (litigation and arbitration). A Statement of Truth can be very concise and clear, as follows:

“STATEMENT OF TRUTH:

I confirm that, insofar as the facts stated in my report are within my own knowledge, I have made clear which they are and I believe them to be true, and that the opinions I have expressed represent my true and complete professional opinion.”

Conclusion

When a contractor’s quantum expert witness prepares a report for filing with the arbitral tribunal sitting in an international arbitration construction project dispute, governed by a valid contract agreed by the parties, the expert must be aware of the needs of the tribunal. Not only must the expert’s loss calculations, methodologies and opinions be supported by sufficient, reliable and relevant evidence, but the various ways in which their evidence is presented – in reports, in both direct

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9 Pursuant to Article 5.2(c), the Expert Report shall contain “a statement of his or her independence from the Parties, their legal advisors and the Arbitral Tribunal. Article 5.2(g) provides that the Expert Report shall also include “an affirmation of his or her genuine belief in the opinions expressed in the Expert Report”. Available for download at: http://www.ibanet.org/ENews_Archive/IBA_30June_2010_Enews_Taking_of_Evidence_new_rules.aspx

10 For example, as referred to previously, the Academy of Experts’ website carries downloadable examples of Expert’s Declarations and also Statements of Truth, suitable for various forms of legal proceedings including arbitration: www.academyofexperts.org/guidance/expert-witnesses/experts-declarations

11 Ibid.
and cross-examination, as well as in any presentation made as part of the hearing – must take into account the arbitrators’ needs by being tailored to facilitate their understanding.

Experienced experts will work closely with counsel and their clients to achieve these aims.

*These views are solely those of the authors and do not necessarily reflect the views of Charles River Associates, Schellenberg Wittmer Ltd, their Boards, or staff.*
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