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# ARBITRATION DAMAGES – USING SENSITIVITY ANALYSIS, SCENARIO MODELLING AND DATA VISUALISATION TOOLS

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MINI-ROUNDTABLE

# ARBITRATION DAMAGES - USING SENSITIVITY ANALYSIS, SCENARIO MODELLING AND DATA VISUALISATION TOOLS



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**Stefan Boedeker** is a managing director with BRG's economics and damages practice where he leads the statistical consulting group. He has provided economic, financial and statistical consulting and expert services to clients across a wide range of industries, including but not limited to healthcare, pharmaceuticals, high technology, manufacturing, retail, real estate, financial services, and others. He has issued hundreds of expert reports and given deposition and trial testimony over 190 times.

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**Paul Diver** Ph.D. is a director in BRG's Washington, DC office. Dr Diver has applied statistical and econometric techniques in solving complex problems in matters heard before federal and state courts, administrative law judges, regulatory commissions, and in arbitration. He has been engaged and submitted expert reports as a statistical expert, and he has been deposed in matters before federal court and in arbitration. He has also provided extensive consulting services to healthcare clients and their counsel. Notably, Dr Diver has developed complex sampling designs, drawn samples, and evaluated the statistical validity of samples and their associated extrapolations for clients.

**CD: Could you provide a general overview of the key issues involved in assessing damages in arbitration? How has the practice evolved in recent years?**

**Boedeker:** Damages assessment is often an exercise in estimation rather than simple enumeration. Any damages estimate provided must be statistically reliable and derived through a well-established and replicable statistical methodology. It is also incumbent upon the statistical expert to advise the parties involved on how best to interpret and understand any calculated estimates by pointing out how assumptions and methodology impact the estimates. Accordingly, the statistical expert should advise parties on the magnitude of imprecision involved and the best way to understand the meaning of that imprecision. Experts can disagree on the most appropriate methodological approach to estimating damages figures. Of course, different methodological approaches can lead to different damages estimates, and at times by very large degrees.

**Diver:** Historically, we have frequently observed the separate statistical experts of adverse parties independently developing and applying their own analytical methods to generate damages estimates. This generally leads to contentious disagreement on those methods and estimates during the arbitration proceedings, including time consuming

cross-examinations and, in some cases, entire methodologies being thrown out. In recent years, we have noticed an increased willingness of parties to have the statistical experts confer before the bulk of any damages estimation work is performed to develop mutually agreeable approaches or to clarify why differing approaches might be used. While disagreements between experts may still remain, the practice of expert conferral can have dramatically simplifying and cost saving effects over the long run in the arbitration.

**CD: What factors typically influence how damages are calculated? What steps need to be taken to ensure the figure reached is logical, justifiable, and defendable?**

**Diver:** Deliberate planning is essential to achieving a meaningful analysis. It is critical to have a clear statement of the analytical objectives, a full and comprehensive understanding of the data to be analysed, and a clear specification of the precision desired for any resulting estimates. Without a solid foundation, any subsequent analysis is likely to be of little assistance to the parties involved. Perhaps the most important component is the clear definition of the analytical objectives, including the definition of the damages figure to be estimated. This sounds simplistic but it is one of the most common failings of opposing experts. This failure notoriously leads to methodological choices which are at odds with the

actual goals, decreased reliability of the estimates, inefficient analytical designs, and at worst irrelevant and statistically meaningless results.

**Boedeker:** Besides clearly defining the objectives, the empirical data must be understood in depth and confirmed to be relevant to the purposes of the analysis. We frequently observe analyses performed on data which do not represent the relevant population, or which contradict the facts. Consequently, these analyses provide limited value, and the results of which cannot be extrapolated or generalised. To gauge the reliability of any damages assessments, those figures should be reported with a measure and description of the precision with which they were estimated. Frequently, this precision is treated as an afterthought and a by-product of the analysis, rather than a measure to be considered at the time of its design and methodological selection. It is important to understand what precision threshold must be achieved for an estimate to be considered sufficiently precisely estimated.

### **CD: In what ways can the early calculation of damages affect a party's approach to arbitration?**

**Boedeker:** An early assessment of damages, even a 'ballpark' estimate, can dramatically affect a party's strategic approach to arbitration. For example, a limited, but still informative, quick and inexpensive early damages analysis may reveal that any resulting figure will be unexpectedly low or unexpectedly high, even once estimation imprecision is considered. As

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*Stefan Boedeker,  
BRG*

a result, this may assist with a party's consideration of the merits of settlement or the potential benefit of continuing through to the end of an arbitration proceeding. The claimant may utilise an early assessment of damages as a benchmark to file or not file a case, while the respondent will allocate its resources of defence based on its early assessment of damages.

**Diver:** Often, both parties in an arbitration will use a decision-tree like approach to assessing realistic

probabilities to potential damages estimates to allocate resources to the entire process. Moreover, attempting to calculate damages early in a process can reveal data issues which will have impacts on discovery requests. To that end, an early damages calculation may reveal the complexities involved with the matter and allegations of wrongdoing at issue. This may enable a party to cordon off certain allegations and even eliminate entire sub-populations originally at issue. As a result, the party may be able to substantially lessen the final damage figures and affect the opposing party's willingness to consider settlement.

**CD: How might a greater use of technology, such as data visualisation tools, assist damages calculations? Are there limitations to such methodologies?**

**Diver:** We are in the era of big data, which requires experts to have the analytical skills and toolkit to analyse the massive amount of data regularly being produced and stored. Data visualisation tools can provide otherwise hidden insights into understanding the relevant relationships between business variables that are instrumental in the processes that are at issue in many arbitrations. These tools provide a necessary, but neither

foolproof nor free from misuse, method to determine the next steps in a damages analysis.

**Boedeker:** Data visualisation is an excellent tool to identify trends, illuminate the need for further analysis, and illustrate complex relationships. However, data visualisation can easily be abused to

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highlight trends and correlations that do not exist or misrepresent the weight and importance of certain data over others, which can seriously bias or skew the outcome of the damages estimation process.

**CD: What about sensitivity analysis and scenario modelling?**

**Diver:** Sensitivity analysis and scenario modelling are methodologies that have been around for decades. Experts can run thousands of scenarios

and sensitivities to model the possible outcomes that may lead to damages. Damages estimates can then be weighted with their associated probability of occurrence. This enables experts to compute expected values for damages which, if done correctly, are typically more robust and reliable than estimates based on individual scenarios.

**Boedeker:** Sensitivity analysis and scenario modelling are methods that heavily depend on the assumptions that feed their inputs. Often, assumptions are not made explicit by an expert, and consequently, scenarios or sensitivities that are based on unrealistic assumptions are presented with equal weight to other scientifically derived approaches. Any and all assumptions that impact the input of sensitivity analysis and scenario modelling must be made explicit and undergo a test against facts and data. If such tests fail, then the assumption must be rejected.

### **CD: What challenges are likely to arise in practice when advancing or defending a damages claim? What legal and economic frameworks and structures need to be observed when calculating a figure?**

**Boedeker:** The respondent's experts and defence teams will attempt to discredit any aspect of the claimant's experts and the analyses they present. This may also include other opinions previously

rendered by the expert. Furthermore, the challenges presented will focus on a misunderstanding of the issues at hand, the general damages model utilised or the lack of a formal model altogether, unrealistic assumptions, the use of the data and possibly errors in the application of a specific economic, financial or statistical methodology, and calculation errors.

The claimant's experts must develop their damages claim anticipating each one of these possible challenges rather than waiting for a reply or rebuttal to justify and defend their approach. Any changes in the damages claim that are necessary due to a challenge by the respondent's experts make the initial claim less credible in the eyes of the arbitration panel.

**Diver:** Any damages claim must correctly incorporate the legal framework on which the claim is based. In more colloquial terms, if the methodology is divorced from the legal theory, then even an otherwise compelling approach to quantifying damages must be rejected. Here it is important to remember that the economic, financial or statistical experts should not cross the line and render legal opinions, but they must be able to show that they have a sound understanding of how the legal framework affects their respective area of expertise. An important economic framework that cannot be overlooked is the proper definition of the 'but-for world'. The 'but-for world' is the hypothetical world where the alleged wrongdoing did not occur.

A proper damages model must isolate the economic effect of the alleged wrongdoing and then quantify the change in the financial situation that the claimant experienced based on the alleged wrongdoing.

**CD: With expert views on damages having the potential to differ substantially, how important is it that presentations are communicated with clarity to arbitral panels? What characteristics do expert witnesses need to demonstrate?**

**Diver:** All expert witnesses must demonstrate the skills, knowledge and experience that make them an expert in the field in which they are providing testimony. Technical expert analyses, and particularly criticisms of technical analyses performed by other experts, are very complex. It is easy for an expert to slip into technical jargon which is difficult to understand for non-experts. However, if an arbitral panel cannot understand the testimony, all potentially great technical work might be highly discounted because no one knows what was actually done and therefore the results are distrusted. In the legal setting of the testimony situation, answer-by-answer, the expert needs to assist the arbitral panel in considering the presented ideas and opinions. An expert who besides credentials, qualifications and technical skills has also mastered the art of clarity in communication, will be of greater assistance to the arbitral panel.

**Boedeker:** Most of the time, experts who have been designated to testify in an arbitration have impressive CVs documenting their technical skills. However, the differentiating factor between experts can be found in the ‘soft skills’ they demonstrate during their testimony. Demonstrating the ability to be independent and not to appear as a ‘hired gun’, knowing about the potential limitations of their work, attention to detail, and the ability to clearly state and support all their assumptions are the characteristics that make experts great. Successful experts will emphasise the point that their main purpose is to assist the arbitral panel not only by doing good work but by educating the panel in the most important areas of the analysis so they can feel comfortable with the analysis and the results derived from that analysis to make an educated decision at the end of the proceedings.

**CD: Looking ahead, how do you expect the process of calculating damages to improve? What methodologies and approaches are likely to dominate?**

**Boedeker:** As the cost of data collection and storage are no longer a financial strain for many companies, it is ever more important to utilise reliable and agreed upon data cleansing, data normalisation and data standardisation processes. As there are not yet widely recognised or established processes out there to create the input

data for a damages analysis, I foresee that increased time will be spent on creating the correct input data for damages analyses prior to even filing damages claims. That also means that companies may use ongoing analysis of the wealth of data in their custody to identify situations where they may have a claim or where they may be at risk of having a claim filed against them.

**Diver:** In the near future, there will still be manual aspects of data evaluation and review, however technical tools will be developed to make the processing of data even more efficient and reliable. The development of better analytical tools may shift the work of economic, financial or statistical experts more into the area of identifying and interpreting the results of more complex algorithms than are typically used today. Furthermore, more efficient data processing will allow for the application of these more complex methods, which will yield greater precision and greater insight into important details within the data. Methods that are viewed as state-of-the-art today may soon be viewed as coarse methods of analysis and give way to highly sensitive analyses allowing for more refined, flexible, and even greater precision estimation techniques. CD