Building Defensible Models for Litigation

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I. Introduction

Economic models carry real weight in litigation. They estimate damages, test theories of harm, and often shape whether a case settles or goes to trial. Meanwhile, greater computing power, artificial intelligence, and advanced statistical software have made it easier than ever to build complex models — and tempting to equate sophistication with rigor. In litigation, that instinct is usually wrong. A model is only as valuable as its ability to withstand scrutiny: from opposing counsel, from the other side's expert, and ultimately from the court. The most useful models are the ones that are defensible in court and produce reliable results. Defensibility, in other words, is not something lawyers add after the fact — it is a property of the model itself, the product of economically grounded specification, transparent data choices, and results that hold up when tested.

The rest of this article proceeds as follows. Section II explains why complexity is not the goal. Section III describes how experts defend their modeling choices in court, where Daubert and Federal Rule of Evidence 702 make the reliability of principles and methods the price of admission. Section IV turns to how we know whether a model's results are reliable. Section V concludes.

II. Why Complexity Is Not the Goal

Advances in computing power, artificial intelligence, and statistical software have transformed the practice of economic modeling in business. Today's economists can analyze enormous data sets, estimate highly sophisticated econometric models, and evaluate complex economic relationships that would have been impractical only a decade ago. These advances have expanded the range of questions that economists can answer and have improved our ability to quantify economic damages in litigation.

Yet greater computational power does not necessarily produce better expert opinions. This is because every increase in model complexity introduces additional assumptions, additional analytical choices, and additional opportunities for error. The expert will need to justify each explanatory variable and explain every transformation of the data. Every assumption regarding model specification, estimation, and interpretation becomes another issue that opposing counsel may examine during deposition or challenge at trial. For that reason, the objective of an economic expert is not to build the most sophisticated model possible. The objective is to build a model that is reliable, transparent, and capable of withstanding scrutiny.

This distinction is particularly important in litigation. Litigation does not have the same leeway that business decisions might have. Business decisions are often made under conditions of uncertainty, where decision-makers may be willing to rely on models that provide directional guidance even if they are imperfect — a model suggesting that a 5–10% price increase would be profitable may be good enough to act on. Courts operate under a different standard. An expert's conclusions must rest on reliable principles and methods, and a model whose conclusions shift

with its assumptions will not withstand scrutiny and may carry little evidentiary weight, regardless of how sophisticated the underlying mathematics is.

This does not suggest that sophisticated econometric techniques should be avoided. On the contrary, modern litigation frequently requires advanced statistical methods to analyze issues such as price-fixing, lost profits, employment discrimination, intellectual property damages, and consumer class actions. The question is not whether a model is complex. The question is whether that complexity is necessary and whether it can be justified.

A useful principle is that every element of a model should contribute to answering the economic question before the court. Economists should not include variables simply because statistical software identifies them as statistically significant, nor should complicated estimation procedures be employed merely because they are available. Each modeling decision should be supported by sound economic theory and a clear understanding of the market being analyzed.

Experienced economists recognize that simpler models often possess an important advantage. They are generally easier to explain, validate, and reproduce, and easier for judges, juries, and attorneys to understand. More importantly, they leave fewer opportunities for opposing experts to argue that the results are driven by questionable assumptions rather than by the underlying economic evidence.

Ultimately, the credibility of an economic model depends less on its mathematical sophistication than on its transparency and reliability. For litigation purposes, complexity is never the objective. Credibility is.

III. How Economic Experts Defend Their Models in Court and Daubert Challenges

An economic model is *not* persuasive simply because it produces statistically significant results. In litigation, opposing counsel and their expert will examine every important aspect of the analysis and sometimes offer competing models of their own. The court then evaluates both sides' work, and its evaluation has a formal legal standard. In *Daubert v. Merrell Dow Pharmaceuticals* (1993), the Supreme Court assigned trial judges a gatekeeping role: before an expert ever reaches the jury, the court must satisfy itself that the testimony rests on reliable principles and methods, reliably applied to the facts of the case — a standard now codified in Federal Rule of Evidence 702.

In practice, this arrives as a "Daubert challenge": a pretrial motion by opposing counsel asking the court to exclude the expert's testimony as unreliable. Courts weigh factors such as whether the method can be tested, whether it has been peer-reviewed and generally accepted, its known error rate, and — often decisive for economists — whether the expert applied the method with the same rigor the discipline demands outside litigation. The stakes are hard to overstate: an excluded damages expert can end a case before trial, because a plaintiff with no admissible damages evidence may face summary judgment.

A model therefore must be more than mathematically correct. It must be economically sound, transparent, and capable of withstanding scrutiny. The process begins long before the first regression is estimated. It begins with the economist's understanding of the market and the theory of harm underlying the dispute. Statistical software cannot determine which variables belong in a model or whether the estimated relationships are economically meaningful. Those decisions require professional judgment grounded in economics.

A. Every Variable Must Have an Economic Rationale

Every explanatory variable should have a clear economic justification regardless of whether it improves the statistical fit of the model. Equally important is explaining why other variables were excluded. The most common specification problem in litigation is omitted variable bias. In an antitrust damages analysis, prices may change because of shifts in demand, changes in production costs, exchange rates, transportation expenses, inflation, or technological developments. Unless these legitimate market forces are adequately controlled for, a regression model may incorrectly attribute ordinary price movements to the alleged conspiracy. The objective is to develop a model that accurately reflects the underlying market conditions — controlling for the forces that would have moved prices anyway, so that whatever remains can credibly be attributed to the conduct at issue.

B. Measuring Variables Correctly Using Reliable Data Sources

An expert must also explain how variables were measured and document the sources of the data employed. An econometric model can rely on several different sources for similar information, including government statistics, company records, and industry reports. Relying on such established sources is itself a source of credibility: because these measures exist independently of the litigation — compiled by government agencies, generated in the ordinary course of business, or published by industry observers — they cannot be portrayed as having been constructed by the expert to reach a desired result. An expert should be prepared to explain why one source was selected over another and, whenever practical, determine whether alternative data sources produce materially different results. Unorthodox measurement choices or unreliable data sources invite the court to dismiss the model and its results entirely.

C. Model Specification Should Not Be a Data-Mining Exercise

One criticism frequently raised during cross-examination is that the expert simply estimated numerous regressions and cherry-picked the one that produced the desired outcome. A defensible economic model should not be developed in this manner. Model specification should be guided by economic theory, industry knowledge, and accepted econometric practice. Every specification should have a legitimate economic purpose. The expert should be able to explain why the selected model is economically sound, defensible, and conservative in its damages estimates — and reasonable alternatives are not discarded but retained as sensitivity checks that test whether the conclusions hold.

D. Transparency Builds Credibility

Transparency has a concrete test in litigation: another economist, given the expert's report and backup materials, should be able to reproduce the analysis and trace every result back to its source. That standard shapes how the work is done. Data processing steps are documented, analytical choices are recorded along with the reasons for them, and the path from raw data to damages figure is preserved — not reconstructed after the fact.

Transparency also means candor about judgment. Every damages model involves choices on which reasonable economists could differ, and an expert who acknowledges those choices — and shows the results hold up under the alternatives — is far more credible than one who presents the model as the only possible approach. Juries and judges are quick to sense when something is being obscured; a black box invites the inference that the box is hiding something.

The payoff comes under cross-examination. An expert who can explain any assumption, variable, or data source, and say plainly why each choice was made, turns opposing counsel's probing into

a second direct examination. Successful expert testimony ultimately depends on demonstrating that the results came from a transparent, methodical, and economically sound process.

IV. How Do We Know Whether the Results Are Reliable?

Every econometric model contains assumptions. Sensitivity analysis systematically evaluates whether reasonable alternatives — different specifications, estimation periods, and data sources, each examined below — materially affect the results. If the principal conclusions remain substantially unchanged, confidence in the model increases. On the other hand, arriving at different conclusions based on different modeling choices will undermine confidence.

A. Evaluating Different Model Specifications

Economic modeling rarely admits only one acceptable specification: reasonable economists can differ over functional forms and explanatory variables. That is precisely why specification choices must be examined rather than assumed away. The expert should re-estimate the model across the economically reasonable alternatives and show how the conclusions respond. Robust findings remain broadly consistent across those alternatives; results that swing with each specification are fragile — and fragility invites both a Daubert motion and the inference that the reported specification was chosen for its outcome.

B. Examining Alternative Estimation Periods

Many damages models depend on a benchmark period — the window of "clean" data, unaffected by the alleged conduct, used to estimate what prices or profits would have been but for the challenged behavior. The choice of that window is itself an assumption, and it deserves the same scrutiny as any other. Sometimes, there is evidence for a particular start or end date. When evidence is lacking, sensitivity around the start and end dates should be carefully examined, especially if shifting the benchmark period by a quarter, excluding a period of unusual market disruption, or re-estimating over a slightly longer or shorter window materially change the conclusions. When the results do move with the estimation period, the expert must be able to explain why on economic grounds — a structural change in the market, a demand shock, a new entrant — rather than leave the impression that the window was chosen because it produced the largest damages figure.

C. Comparing Results from Different Data Sources

The same economic variable can often be measured from more than one source: production costs from defendant accounting records or government industry statistics, prices from transaction data or commercial indices, market shares from company filings or industry trackers. These sources rarely agree perfectly — they differ in coverage, definitions, frequency, and reliability — and the differences are not always innocent. List prices can diverge sharply from transaction prices; a government index may average across products the case treats as distinct markets.

Re-estimating the model with an alternative data source is therefore one of the most persuasive reliability checks available. When independently collected data lead to substantially the same conclusion, the finding is much harder to dismiss as an artifact of any one dataset — each source corroborates the other. When they lead to materially different conclusions, that divergence is a finding in its own right: the expert should investigate why, resolve which source better fits the economic question, and be prepared to explain the choice. What an expert cannot do is run the comparison, dislike the answer, and leave it out of the report — that omission is exactly the kind of material an opposing expert will find in the backup production.

D. Do the Results Make Economic Sense?

Statistical significance alone does not establish reliability. A regression can produce estimated coefficients that are economically absurd, and a model that contradicts basic economics fails no matter how strong its statistics look. Estimated relationships should be consistent with accepted economic theory and with the known facts of the industry: demand curves should slope downward, higher input costs should not appear to lower prices, and an unexpected sign — a negative demand or cost coefficient, for example — usually signals a specification problem or multicollinearity and must be investigated and explained, not waved away.

Magnitudes deserve the same scrutiny as signs. An estimated overcharge implying margins no firm in the industry has ever earned, an elasticity far outside the range documented in the literature, or damages that exceed the defendant's total revenue in the affected market are all warning signs. Checking results against these external benchmarks is among the simplest reliability tests an expert can run because implausible results are the first thing an opposing expert will hold up to the jury. A model whose output cannot be squared with how the industry actually works has failed the most basic test of all.

V. Conclusion

The best litigation models are rarely the most complex ones. They are the ones built on sound economic rationale, reliable data sources, and appropriate model specifications. Complexity has its place — some questions cannot be answered credibly without advanced methods — but it is never the goal. A model the court can understand, probe, and trust is worth more than an elegant black box, because in the end the models that decide cases are the ones that survive scrutiny. Defensibility is not argued at the end of an engagement; it is built into the model from the first specification decision to the final sensitivity run. The expert who works that way walks into a Daubert hearing with nothing to hide and walks out with a model the court can rely on.

About the Author

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