Uncovering the Secrets of Statistics as Evidence in Business Valuations

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Trials over the value of a business involve data, in large amounts, which must be presented in an understandable and impactful way. Statistics, when used properly, allow us to detect patterns or test theories we could not comprehend from a sea of numbers. But these shortcuts can be misused to create the appearance of accuracy, either through the expert's failure to understand statistics or desire to deceive. This article explains, in simple terms, how to avoid these traps and spot a good statistic from a bad one.

The risk of false statistics in the courtroom cannot be understated. The murder prosecution of English solicitor Sally Clark (1964-2007) was a miscarriage of justice founded on a statistic. She was convicted and sentenced to life in prison in 1999 for murdering her two infant sons who died two years apart.[1] Her defense argued sudden infant death syndrome (SIDS) was the cause.[2] The prosecutor's expert, a pediatrician, testified that the chance of a SIDS death was 1 in 8,500. And to to find the odds of two children dying in the same household of SIDS, he squared that number (8,543 × 8,543), claiming it was a 1 in 73 million chance that both of Ms. Clark's children could have died of SIDS.[3] The jury convicted Ms. Clark on that evidence. In October 2001, the Royal Statistical Society reported its concern about the "misuse of statistics in the courts" and said "no statistical basis" existed for the 1 in 73 million figure.[4] The deaths were not independent events but ones which occurred in the same household. No empirical evidence existed to support the expert's testimony.[5] The Society warned: "Although many scientists have some familiarity with statistical methods, statistics remains a specialized area. The Society urges the Courts to ensure that statistical evidence is presented only by appropriately qualified statistical experts, as would be the case for any other form of expert evidence."[6] The conviction was overturned after Ms. Clark served three years in prison when evidence came to light that her second child had died from a bacterial infection, which the prosecution failed to disclose.[7] Ms. Clark was debased by the failures of the legal system in which she had worked as a solicitor and did not recover from the experience.[8] The lesson from Clark's case is that the field of statistics is a specialized area that unqualified experts should not tinker with, and courts must understand when statistical evidence is not worthy of admission.

EVALUATING STATISTICS

A statistic can be distorted, just as any other evidence that relies on the credibility of the witness who presents it. It's been said that "there are three kinds of lies: lies, damned lies, and statistics."[9] The problem with statistics is that their precision gives the illusion of significance. We rarely question what sounds like science because we lack the time or skill to evaluate it. This allows experts to present faulty statistics, which might easily become a finding that overstates or oversimplifies the facts.

To avoid the persuasive powers of statistics, basic rules were developed in 1954 by journalist Darrell Huff in his bestselling book, *How to Lie with Statistics*. "Not all the statistical information that you may come upon can be tested with the sureness of chemical analysis…. But you can prod the stuff with five simple questions, and by finding the answers avoid learning a remarkable lot that isn't so."[10] The simple test proposed by Huff for evaluating statistics provides the framework for deep analysis.

Who Says So?

Look closely for bias of the author or funder of the study.[11] One of the weakest forms of evidence is "authority" (citing to the person or organization that developed the statistic); yet, we can be impressed by *who they are* rather than asking *how they know* what they claim.[12] Identity tells us nothing to support the relevance or accuracy of the statistic, but may reveal a motive to create flattering results. The point here is to consider that the expert who constructed the statistic has a bias for the result to support the conclusion.

Footnotes

1. *Sally Clark*, WIKIPEDIA, https://en.wikipedia.org/wiki/Sally_Clark (last visited Mar. 7, 2022).
2. *Id.*
3. *Id.*
4. News Release, Royal Statistical Society, Royal Statistical Society Concerned by Issues Raised in Sally Clark Case (Oct. 23, 2001), https://web.archive.org/web/20110824151124/http://www.rss.org.uk/uploadedfiles/documentlibrary/744.pdf (last visited Mar. 7, 2022).
5. *Id.*
6. *Id.*
7. R. v Sally Clark [2003] EWCA (Crim) 1020 (Eng.), http://www.bailii.org/ew/cases/EWCA/Crim/2003/1020.html.
8. *Sally Clark*, *supra* note 1.
9. Popularized by Mark Twain and commonly attributed to British prime minister Benjamin Disraeli. See *Lies, Damned Lies, and Statistics*, WIKIPEDIA, https://en.wikipedia.org/wiki/Lies,_damned_lies,_and_statistics (last visited Mar. 9, 2022).
10. DARRELL HUFF, HOW TO LIE WITH STATISTICS 122 (1954).
11. *Id.* at 123.
12. Ben Goldacre, *Battling Bad Science*, TED GLOBAL (July 2011), https://www.ted.com/talks/ben_goldacre_battling_bad_science (last visited Mar. 9, 2022). *See also* BEN GOLDACRE, BAD SCIENCE (2008).

How Do They Know?

"Watch out for evidence of a biased sample, one that has been selected improperly" or is too small to mean anything.[13] When evaluating a study, ask how many people participated in the study (sample size), whether those who participated are representative of the litigant to which the study is being applied (relevance), and likelihood that the observed result could have occurred by chance as opposed to a specific cause (statistical significance).

What's Missing?

"You won't always be told how many cases [are in a study]. The absence of such a figure, particularly when the source is an interested one, is enough to throw suspicion on the whole thing."[14] When data are held back we cannot evaluate the statistic, and no rational conclusion can be based on it. Surveys with statistical significance are expensive to construct. With some surveys, the publisher will want to sell the information to experts and keep others from profiting off their surveys, so these publish-ers may claim their data is proprietary and refuse to release the key information on which the studies are based. That makes sense for the publisher, but how can an expert reasonably rely ona study when its data are hidden?

Did Somebody Change the Subject?

"When assaying a statistic, watch out for a switch somewhere between the raw figure and the conclusion. One thing is all too often reported as another."[15] This is the classic fallacy of confusing correlation with causation. Just because two events happen together does not mean that one had anything to do with the other.[16]

Does It Make Sense?

"Many a statistic is false on its face. It gets by only because the magic of numbers brings about a suspension of common sense."[17] It is easy to be lured into believing a statistic because of the persuasive power of numbers. Stepping back and applying common sense to the conclusion the expert wants us to accept is often all that is needed.

HOW STATISTICS APPEAR IN COURT

Sometimes a statistic can be taken as evidence without having an expert on the stand. Statistics that are reasonably subject to dispute may be judicially noticed.[18] This saves time and money when the accuracy and reliability of the statistic cannot reasonably be questioned. By example, life expectancy tables are statistics that courts may judicially notice.[19] The use of the life tables in *Vital Statistics of the United States*, published by the National Center for Health Statistics, is recommended for California jury trials.[20] Mostly, a proposed statistic will be hotly disputed, making it unavailable for judicial notice. An expert, hopefully one qualified in using statistics, will need to persuade the trier of fact that the statistic is credible enough to form a basis for the expert's opinion.

Court's Gatekeeping Role

An expert witness can rely on statistics in forming an opinion—if the information is of the type an expert may reasonably rely upon in forming the opinion, whether or not the information is itself admissible.[21] The battleground is whether the statistical information is reliable enough for experts to use, or is conjecture that no reasonable expert would have considered.[22] The trial court is a "gatekeeper to exclude speculative expert testimony."[23] As explained by one court: "(W)hen an expert's opinion is purely conclusory because unaccompanied by a reasoned explanation connecting the factual predicates to the ultimate conclusion, that opinion has no evidentiary value because an expert opinion is worth no more than the reasons upon which it rests."[24]

The rule in *Daubert*[25] is that trial judges must be gatekeepers and exclude unreliable expert testimony, whether that testi- mony is based in science or otherwise.[26] Expert opinion that relies on statistics must pass through that gate to be admissible. The *Daubert* factors, as applied to statistical propositions, are (1) whether the expert's calculation or survey has been, and can be, objectively tested for reliability; (2) whether the calculation or survey has been subject to peer review and publication; (3) the known or potential rate of error of the calculation or survey when applied; (4) the existence and maintenance of standards and controls; and (5) whether the calculation or survey hasbeen generally accepted in the statistics community.[27] Post- *Daubert*, courts have identified other factors relevant to a statis- tical inquiry: (a) whether the testimony grew naturally fromresearch independent of the litigation, or if it was developedwith testimony in mind;[28] (b) whether the expert has extrapo- lated an accepted premise into an unfounded conclusion;[29] (c) whether the expert accounted for plausible alternative explana- tions;[30] and (d) whether the expert used the same intellectual

13. HUFF, *supra* note 10, at124.
14. *Id*. at 126-27.
15. *Id*. at 132-33.
16. *Statistical Language—Correlation and Causation,* AUSTRALIAN BUREAU OF STATISTICS, https://www.abs.gov.au/websitedbs/D3310114.nsf/home/statistical+language+-+correlation+and+causation (last visited Mar. 9, 2022).
17. HUFF, *supra* note 10 at 137-38.
18. *See, e.g.*, Cal. Evid. Code § 452(g);Fed. R. Evid. 201(b)(2).
19. Dickinson v. S. Pac. Co., 172 Cal. 727, 158 P. 183 (1916); Allen v. Toledo, 109 Cal. App. 3d 415, 424 (Ct. App. 1980).
20. Cal. Civil Jury Instructions (CACI) No. 3932; Life Expectancy Table – Male; Life Expectancy Table – Female.
21. See, e.g., Cal. Evid. Code § 801(b); Fed. R. Evid. 702-703.
22. See, Korsak v. Atlas Hotels, Inc., 2 Cal. App. 4th 1516, 1526 (1992) (privately conducted survey not reasonable for expert to rely on).

23. Sargon Enterprises, Inc. v. Univ. of S. Cal. 55 Cal. 4th 747, 769-81(2012) (speculative opinion on damages).
24. Jennings v. Palomar Pomerado Health Sys., Inc. 114 Cal. App. 4th1108, 1117 (2003)(internal quotes omitted).
25. Daubert v. Merrell Dow Pharms, Inc., 509 U.S. 579 (1993).
26. Kumho Tire Co. v. Carmichael, 526 U.S. 137, 156-57 (1999).
27. See, Fed. R. Evid. 702, committee notes on rules to 2000 amendment; *Kumho Tire,* 526 at 149-50 (application of *Daubert* to nonscientific expert testimony).
28. Daubert v. Merrell Dow Pharms, Inc., 43 F.3d 1311, 1317 (9th Cir. 1995).
29. Gen. Elec. Co. v. Joiner, 522 U.S. 136, 146 (1997).
30. Claar v. Burlington N.R.R., 29 F.3d 499 (9th Cir. 1994); cf., Ambrosini v. Labarraque, 101 F.3d 129 (D.C. Cir. 1996) (only obvious or reasonable alternatives must be ruled out).

rigor in forming the opinion in court that the expert uses in practice.[31]

When the expert has relied on unreasonable information as a significant basis for the opinion, then the opinion should be excluded.[32] It is important for counsel to "lock in" the expert in deposition or *voir dire* that the expert has relied on statistical information as a significant basis for the opinion. Otherwise, the expert can say (when exclusion is sought) that the statistic was unimportant.

Reliance Does Not Equal Admission

The rule against reliance on *unreasonable information* is often confused with the rule that allows experts to consider *inadmissible information* to form an opinion. The two concepts are not the same. If an expert reasonably relies on information in forming an opinion, it is a proper basis for the opinion even if the information is inadmissible under the rules of evidence.[33] For example, a published study would probably be inadmissible under the rule against hearsay,[34] but the information in that study may be reliable and accurate enough for the expert to rely upon it. The question is whether a reasonable expert would rely on the information (not whether the information is independently admissible). If so, the opinion may be admitted, even though the information underlying the opinion could not itself be admitted.[35] This is true because that data the expert considered are notoffered into evidence—it is the *opinion* of the expert that consti- tutes evidence.

Conversely, just because an expert relies on information to form an opinion does not mean that the underlying information goes into evidence. The information relied upon by the expert is not made admissible simply by the expert considering it; there must be an independent evidentiary basis for its admission if the proponent wants it in evidence.[36] To keep out hearsay information, the expert generally may not disclose inadmissible information that the expert relied upon, while on direct examination.[37] The expert, instead, can testify generally on direct as to the types of information considered, without revealing inadmissible hearsay. For example, the expert may testify on direct: "I relied on a study performed by the Society of Statisticians in forming my opinion regarding the probability of this event occurring." That provides a *basis* for the opinion without revealing the *content* of the study. The expert may not add, "and the study showed a 1 in 5 million chance of this event occurring" as that would be inadmissible hearsay on direct exam.

An exception allows for the expert to be asked for the information underlying the opinion on cross-examination.[38] This allows the cross-examiner to delve into the specific information the expert used, to show that information was not reasonable to rely upon.

With the rules of evidence out of the way and Huff's tips in mind, we can now turn to the biggest areas where statistics are used—or abused—in business valuation cases: averaging past results, reliance on compensation surveys, and capitalization rates.

GAMES WITH AVERAGES

Taking an average of financial data (such as revenue, income, or expense) is common in business valuations. The goal is to normalize year-to-year performance to illustrate the typical performance of the company. We predict the future based on past results and cannot do that based on one good or bad year. So, we take an average. But not all averages are the same. In a business valuation, statistics may appear to be a simple averaging of numbers by the expert but can lead to widely varying outcomes depending on how the average is taken.

Types of Averages

Did the expert use the mean, median, mode, range, or weighted average? These are different ways of averaging, with vastly different results. The point is to use a method that results in a reasonable illustration of the data, but the expert may be tempted to pick one that favors the desired conclusion.

First, the terminology. The *mean* is a simple average that we are all familiar with. The *median* is the value that appears in the middle of a group of numbers. The *mode* is the most frequent value in a group. The *range* is the difference between high and low values in the group. And then we have the *weighted average*, where more emphasis is placed on certain numbers in a group when taking an average.

Let's take a group of numbers and apply each approach to see the outcomes. For the company we are valuing, the annual revenues over the past seven years were:

TABLE 1: ANNUAL REVENUES

Year	Revenues
1	$100,000
2	$200,000
3	$200,000
4	$300,000
5	$600,000
6	$700,000
7	$800,000

The mean (simple average) is **$414,000**, which is the sum of the group divided by 7. The median (midpoint) is **$300,000** as it occurred in year 4, in the middle of the pack. The mode (frequent number) is **$200,000** because that number appears most often. The range (hi-low difference) is **$700,000**, which is the largest number minus the smallest number.

A weighted average depends on appraiser judgment, where the expert places more importance on certain numbers. It is com-mon for experts to use a weighted average because not all years

31. *Kumho Tire, supra* note *26,* at 152.
32. See, Cal. Evid. Code § 803 (mandating exclusion).
33. See, Fed. R. Evid. 703.
34. See, Fed. R. Evid. 802.
35. Cf., Cal. Evid. Code § 802 (expert may not rely on matters precluded by law, such as information protected by privilege).
36. See, People v. Sanchez, 63 Cal. 4th 665 (2016) (exclusion of case-specific hearsay relied upon by expert in criminal case).
37. See, Cal. Evid. Code 802; Fed. R. Evid. 703 (disclosure allowed on direct only if probative value substantially outweighs prejudice effect).
38. Cal. Evid. Code § 721(a)(3); Fed. R. Evid. 705.

are equal. If the expert believed the performance in year 6 was most representative of the company's performance and wanted to weight that year three times more than other years, the weighted average would be **$655,000**. Here is the calculation:

TABLE 2: WEIGHTED AVERAGE CALCULATION

Year	Revenues	Weight	Product
1	$100,000	0	$0
2	$200,000	0	$0
3	$200,000	0	$0
4	$300,000	1	$300,000
5	$600,000	2	$1,200,000
6	$700,000	4	$2,800,000
7	$800,000	2	$1,600,000
Totals		**9**	**$5,900,000**
Weighted Average: 9 ÷ $5,900,000 = $655,000			

The same data resulted in wildly different "averages" from $200,000 to $700,000 depending on the method used. If the expert is being realistic, the most recent performance for this company (years 5 to 7) appears more indicative of future revenues than its earlier years of operations. This is why a weighted average is used. The appraiser in this example believed the revenues in year 6 were the best representation of go-forward revenues so the most weight was placed on that year. The revenues in years 1 to 3 were deemed irrelevant so no weight was placed on those years.

Representative Sample

A reasonably illustrative time period must be used for averaging income.[39] Cherry-picking information to find an average harms the credibility of the expert and leaves the finder of fact without useful information to value the company, if the problem is exposed. The period which income is calculated "must be long enough to be representative, as distinct from extraordinary."[40]

In an opinion reversing a divorce judgment that valued a solo practitioner's law practice, the appellate court was critical that the trial court failed to spot the biased sample of income used by the wife's expert.[41] In the four years before divorce, the husband's income ranged from $73,000 in 1992, $101,000 in 1993, $71,000 in 1994, and $140,000 in 1995. The expert for the wife valued the husband's law practice on the abnormally good year of 1995.[42] Although this was a transparent effort to increase the valuation, the trial court adopted the expert's opinion.[43] The appellate court held this was an abuse of discretion: "A reasonable trier of fact could not help but conclude the expert chose to use … income from 1995—one of [the husband's] highest earning years—solely to inflate the value of goodwill."[44] In a later case by the same appellate panel, the court stated: "It is a manifest abuse of discretion to take so small a sliver of time to figure income that the determination essentially becomes arbitrary."[45]

The temptation to cherry pick one year (whether the best one to inflate value, or the worst one to depress it) may be too much for some experts to resist. Opposing counsel and their expert are expected to spot those manipulations and bring it to the court's attention. The court also has a role as gatekeeper to ensure only reliable information is allowed in evidence and to apply common sense to opinions it hears.

SURVEY SAYS WHAT?

The other area where statistics crop up in valuation cases is the use of surveys to determine the reasonable replacement valueof owner's services. Evidence of reasonable compensation is needed when valuing a business. This allows the appraiser to know the value of the owner's services to the company, which aretreated as wages, and the remaining business income will be profits. A hypothetical buyer would want to know how much it would cost to replace the operator of the business, so that can beexpensed on the books to reveal the extent of any profits the buyer would make from the business if purchased. Studies are often used to determine the reasonable replacement value of the owner's services to the company. In other words, statistics.

Similarly Situated Professionals

Compensation surveys may be used by experts in forming an opinion on the determining an owner's reasonable compensation when valuing a business.[46] To be relevant, the surveys must account for similarly situated companies and executives.[47] We need to know how many people were in the survey, the method of collecting compensation data, the definition of compensation that respondents were asked, the size of the firms, where the firms are located, what industry or practice areas do the firms serve, and how long ago was the survey conducted. A national survey of attorney compensation at large firms of lawyers in Man- hattan, New York will not show the replacement value of a solo practitioner in a Decorah, Iowa.[48] Even when the survey is bro- ken down by region and practice type, it may not be sensitive enough to provide relevant information.

In a matrimonial case involving the valuation of a cosmetic surgeon's practice in Newport Beach, California, a wealthy coastal town in Southern California, the trial court was critical of the surveys relied upon by the experts for each side.[49] The wife's expert used the Medical Group Management Association (MGMA) Physicians Compensation and Production Survey, which had statistics by region, specialty, and years in practice.[50] The expert relied on figures for the Pacific region, which encompasses the Western states.[51] The trial court was "'troubled by

39. See In re Marriage of Riddle, 125 Cal. App. 4th 1075, 1082 (2005).
40. *Id*., citing In re Marriage of Rosen, 105 Cal. App. 4th 808, 825 (2002).
41. *Marriage of Rosen*, 105 Cal. App. 4th at 820.
42. *Id.*
43. *Id.*
44. *Id.*
45. *Marriage of Riddle*, 125 Cal. App. 4th at 1084.
46. In re Marriage of Iredale & Cates, 121 Cal. App. 4th 321, 325–326 (2004).
47. In re Marriage of Ackerman, 146 Cal. App. 4th 191, 200 (2006).
48. *Marriage of Rosen*, 105 Cal. App. 4th at 821-822.
49. *Marriage of Ackerman*, 146 Cal. App. 4th at 200–204.
50. *Id.* at 200.
51. *Id.*

[what a national survey of the western states has] to do with a plastic surgeon who is doing essentially cosmetic surgery in Newport Beach.' The court considered it common knowledge that, unlike other types of surgery, cosmetic surgery used discretionary income and the amount of discretionary income in Southern California 'is remarkably different ... than in suchplaces as Pocatello, Idaho; or Gallup, New Mexico; or Little Rock, Arkansas.'"[52] The trial court used its common sense in determining reasonable compensation based on the evidence, which was affirmed on appeal.[53]

Poorly Constructed Surveys

Compensations surveys may not be statistically significant, meaning that the study was so poorly constructed that no expert would reasonably rely upon that information in forming an opinion. But it happens and experts may not realize they are relying on conclusions from a study that are not supported by the data. When the sample size of a survey is too small, the author of the study might extrapolate the data from the population it studied to a different population, without clearly disclosing the logical leap in the "survey" results it publishes. Those judgment calls are nothing more than an educated guess. To illustrate this point, let's assume the survey author has good data showing that CEOs of manufacturing businesses in Los Angeles with $100 million in annual revenues are paid a median salary of $1 million (the midpoint of everyone's salary in the sample). But no data are available for companies with $50 million in revenues. The survey author wants to show salary figures for that size of a company, so it cuts the amounts in half from the survey of $100 million businesses and lists $500,000 as the median salary of a company with $50 million in revenues. That would be nothing more than a guess. It assumes, without foundation, that a direct correlation exists between a company's revenues and the salary paid to its CEO. Although this seems like an overly simplistic example, it is not far from how some surveys are constructed. The expert, before relying on the survey must check the data and methodology to know if the results are reasonable to rely upon. But many do not. They simply look at the result of the survey instead of asking how the author arrived at it. Attorneys, experts, and judges should not fall into that trap. Asking the critical questions about the construction of the survey may show it is unreliable and result in exclusion of the expert's opinion and avoid a faulty valuation.

Informal Surveys

Privately commissioned surveys for litigation are unlikely to be reliable enough for an expert to use because of the small sample size, bias issues, and other factors affecting statistical significance.[54] This was attempted in a case involving an injury in a hotel, where the plaintiff was struck in the eye by a jet of water after a shower head fell off while he was showering.[55] The plaintiff's expert was allowed to testify about an informal survey the expert conducted on hotel maintenance practices; the jury found for the plaintiff and the judgment was reversed because it was error to allow the expert to render an opinion based on the informal survey.[56] The court held that the information presented to the jury did not result from a "scientific study, survey, or investigation. … Rather, he made an unexplained, casual sampling of unknown sources within the 'hotel business.' The authenticity, reliability, or the representative nature of the responses are totally undeterminable based upon [the expert's] testimony."[57]

CAPITALIZATION RATE

When the appraiser has found the reliable amount of profits the company will make, one way to value the business is the capitalization of benefits (or earnings) method.[58] This is part of the income approach to valuation, "whereby economic benefits for a representative single period are converted to value through division by a capitalization rate."[59] The assumption is that the company's future cash flow will grow at a slow, steady pace into perpetuity, and that a single period in the past "will provide a reliable estimate of what the business will generate for investors in the future."[60]

The amount a hypothetical buyer would pay for the business depends on how risky those future earnings are. The higher the risk, the lower the value, because the investor could lose money on the purchase. If the earnings are stable and predictable, the buyer would pay more for the business because there is little risk. This risk estimation is how the capitalization rate, also called the cap rate or discount rate, is determined. The riskier the business, the higher the cap rate will be. The cap rate is usually expressed as a percentage, such as 5% for a low-risk business. To perform the valuation, the appraiser will determine a capitalization rate for the business and divide that by the company's earnings. For example, if the business generated $100,000 per year in earnings and was very low risk, such that the appraiser determines the cap rate to be 5%, the business would be worth $2 million under this method ($100,000 divided by 0.05). The high value reflects the low risk involved in receiving the income from the business.

The inverse of the cap rate is the multiple, which is easier to conceptualize. With a cap rate of 5%, the multiple is 20 (1 divided by .05 equals 20). In the above example, it would take 20 years for the investor to recoup the amount paid for the busi- ness from its future earnings (20 years times $100,000 per year in earnings equals $2 million). The long earn-out period owes tothe highly stable earnings of the company. If the business were riskier and the appraiser determined the cap rate is 33% (a mul- tiple of 3), the value would be about $300,000. The investor would recoup the purchase price in three years.

52. *Id.* at 203.
53. *Id.* at 204.
54. Korsak v. Atlas Hotels, Inc. (1992) 2 Cal.App.4th 1516, 1526.
55. *Id.*
56. *Id.*
57. *Id.*
58. See Statement on Standards for Valuation Services (VS Section 100), AICPA (June 2007) https://www.aicpa.org/resources/download/statement-on-standards-for-valuation-services-vs-section-100 (last visited Mar. 10, 2022).
59. *Id.*
60. Mark S. Gottlieb, *The Income Approach Simplified. DCF v. Capitalization of Earnings Methods*, MSG BLOG: BUSINESS VALUATION (Feb. 2019), https://www.msgcpa.com/forensicperspectives/attorneys-should-know-the-difference-between-the-dcf-capitalization-of-earnings-methods/ (last visited Mar. 10, 2022).

The cap rate is debated in court because it involves the subjective assessment of the appraiser, wrapped in a statistical analysis to make it appear objective. "Calculation of an appropriate capitalization/discount rate is one of the most difficult, and critical, steps in valuing a business or business interest. It is also a frequently contested area, since there is no single method or formula to arrive at the discount or capitalization rate."[61] The expert will look at external risk factors (like the health of the economy and industry-wide conditions), internal factors that relate to the size, nature, and position of the business being valued, and investment factors like liquidity and expectations for capital appreciation.[62] The expert will often use a "build-up model" to determine the cap rate, which is a formula-based approach that takes the *risk-free rate of return* (the amount an investor would expect from an investment that bears no risk), plus the *expected equity risk premium* (the amount by which investors expect the future return on equity securities to exceed the risk-free rate), the *expected industry risk premium for the industry* (reflecting the relative risk of companies in that industry), the *size premium* (acknowledging that investors expect higher returns on smaller companies), and the *specific company risk for the company valued* (which is subject to appraiser discretion).[63]

"It is extremely important that the analyst maintain consistency between the type of earnings and the capitalization or discount rates used in the valuation process. For example, a pre-tax rate should not be applied to net income because net income is assumed to be stated on an after-tax basis. This is a very simple distinction. However, often this distinction is overlooked in the valuation of a closely held business, thereby significantly overvaluing or under-valuing the business."[64]

Another common error is to use a growth rate that depends on future capital investments by the company to achieve those earnings.[65] This is usually revealed on cross-examination as an unstated assumption, which makes the expert's valuation worthless or requires an adjustment for the money that would have to be spent to yield those returns. The assumed growth rate for the company is also subject to manipulation when arriving at the cap rate. The idea behind the capitalization-of-earnings method is to base the valuation conclusion on the long-term, sustainable earnings that the company can produce.[66] But some experts will use aggressive rates of return when conducting the build-up analysis, to overstate the value.

CONCLUSION

Statistics are powerful when used by someone who understands them, making a sea of data understandable. But when misused, the persuasive power of numbers can overcome common sense and make us believe results that did not happen. When complex issues like the valuation of a business are liti- gated, a statistic can make a large difference in the outcome. Witha basic understanding of statistics, we can ensure that decisions are made according to reliable information and expose tricks with numbers.

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61. National Association of Certified Valuators and Analysts (NACVA), *Ch. 5: Capitalization/Discount Rates* in Fundamentals, Techniques and Theory (2012), http://edu.nacva.com/preread/2012BVTC/2012v1_FTT_Chapter_Five.pdf (last visited Mar. 10, 2022).
62. *Id.*
63. *Id.*
64. *Id.*
65. *Id.*
66. *Id.*

Answers to Crossword

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