"Defending Against a Daubert Challenge: An Application in Projecting the Lost Earnings of a Minor Child

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I. Introduction

Expert economic testimony can be excluded from evidence by a trial judge if the testimony does not meet the elements of an expert as outlined in rule 702 of the Federal Rules of Evidence.   Since the U.S. Supreme Court's *Daubert v Merrell Dow Pharmaceutical (1993) (1995)* ruling the standard for admissibility of scientific testimony has become more restrictive. The purpose of this article is to demonstrate how an economist might respond to a Daubert challenge. The specific example considered in this article is a response to a hypothetical challenge of expert testimony abut the lost earnings of an injured child that relies on the methodology developed by Spizman and Kane (SK) (1992), and replicated by Gill and Foley (GF)(1995).

District courts under Daubert are charged to act as "gatekeepers," ensuring "that any and all scientific testimony or evidence admitted is not only relevant but reliable." [1] This "gatekeeper" option is intended to prevent misleading or wrong testimony from being admitted as evidence.   The Daubert standard for admissibility of scientific testimony, consists of (but is not limited to) the following five standards:

1. Whether the theory or technique employed is generally accepted in the scientific community;
2   Whether the theory has been subject to peer review and publication;
3   Whether the theory can be and has been tested;
4   Whether the known or potential rate of error is acceptable;[2] and
5. Whether experts are testifying about matters growing directly out of research or have simply developed opinions expressly for the purpose of testifying.[3]

These standards no longer require trial courts to defer to scientific experts for acceptance of expert testimony as has been the case since Frye (1923). The courts under

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[1] Daubert (1993) at 2798-99.
[2] These four standards come from Daubert 1993 at 2796-97.
[3] This fifth standard comes from Daubert 1995 at 1316-17.

Daubert presumably will be able to distinguish between real and " junk science" by questioning the scientific validity of the expert testimony. An important question for forensic economists is whether the courts, under the Daubert standard, will allow economists to testify when new economic methodologies are used?

Economists traditionally use average income figures to create a 'statistical person' for determining what a minor child with no work history would have earned in the absence of the injury. There is no clear consensus among economists concerning the proper methodology for creating this statistical person. In fact, the broad average income data used to create the "statistical person" is not based on direct statistical evidence of the individual child. Under this traditional approach both the plaintiff and defendant would argue that the injured child would have attained a certain amount of education. Then they would claim that the child would have earnings commensurate with the average income for that educational level. Under this approach the plaintiff has an incentive to overestimate the educational attainment while the defendant has an incentive to underestimate educational attainment. A typical example by the plaintiff would be to claim that a particular child will receive an MBA degree even though there is no evidence that anyone in their family ever graduated high school. A typical example by the defendant would be to argue that the child of two parents with high school degrees would also acquire a high school degree (despite the fact that many children acquire more education than there parents). The dichotomy between the plaintiff and defendant may lead the court under the *Daubert* standard to reject economic testimony on this important matter.

This problem can be addressed by estimating the economic losses of a injured minor child using the procedure developed by SK and refined by GF. This methodological approach is an improvement over existing techniques since it relies on information concerning the individual child's characteristics rather than relying on general statistical information. [4] The SK educational attainment model is useful to plaintiffs, defendants and the courts in estimating the educational attainment of the individual child. This technique provides a less subjective method of forecasting educational attainment. In some situations the results would be advantageous to the plaintiff while in other situations it would be advantageous to the defendant. It depends on what each side originally believed the educational attainment of the child to be. The neutrality of the SK and GF procedure will allow the judicial system to settle discrepancies between plaintiff's and defendant's with respect to educational attainment of minor children.

The SK procedure uses an ordered probit model to forecast the probabilities of alternative levels of educational attainment for an injured minor child with no work history. In this model, it is assumed that this probability is affected by a vector of observable demographic and family background characteristics. Once these estimated probabilities are computed, the expected potential lifetime earnings of a child with these characteristics can be predicted. A major contribution of the GF study is that it validates

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[4] Valuing children in wrongful death cases has a more accepted methodology, called the investment approach, see Ireland (1990) and Ward (1989).

the SK model by testing it with another sample, thus showing that the model and results are robust. The GF data set has the advantage of including people who did not graduate from high school (all individuals in the SK study were high school graduates) and considering an expanded set of family characteristics that influence educational attainment. Both studies show what most members of the legal profession intuitively believe: family background characteristics **do** contribute to the probability of a child attaining a certain educational level and, hence, have an impact on expected lifetime income.

To date, the authors know of no court decisions allowing or disallowing testimony of economic damages to an injured minor child based on the SK model. Thus whether the Daubert standards will allow the admissibility of expert testimony on this matter is for the courts to decide. The following sections in this paper will present an argument that the SK methodology does meet the Daubert Standards of admissibility of expert testimony.

II. Application of Daubert to Personal Injury of a Child

Daubert has opened the door for trial courts to become more assertive in reviewing scientific theories and, if necessary, to discard them as being too speculative. Miller and Rein (1997) argue that Daubert should be used by judges in "disposing of cases in which causality is premised on scientific analysis rather than observation." Under Daubert, the judge rather than the jury, is deciding whether expert testimony is admissible. While Daubert involved the "hard sciences" its application has been used in different types of economic testimony.[5] Given the proper facts the Daubert standard may well be applied in a personal injury of a child case using the SK model. Will this model meet those standards?

Although Daubert appears to be the final word on admissibility of expert testimony two recent district courts rulings point out the ambiguity of Daubert. U.S. District Court Judge Robert E. Jones in *Hall v Baxter Healthcare Corp (1996),* agreed with the "disposal of cases" concept and ruled that attorneys cannot introduce evidence, when such evidence, according to Jones, is not scientifically valid. This is important because Judge Jones, under the guidance of Daubert, believes that lower courts can restrict the admissibility of expert witness testimony that was not uniformly acceptable to the scientific community. A different position, however, was taken in a joint decision by Judges Jack B. Weinstein and Harold Baer Jr when they ruled In *re Breast Implant Cases 1996,* that cases should not be disposed of by the courts because expert testimony standards were not satisfied. They ruled that new scientific theories should not be rejected because they lack adequate support but instead should be given time to develop in order to support plaintiff's claims. Judge Weinstein believes that "at times it will be appropriate to delay decision or provide for intermediate relief while studies go forward." The importance of these two different interpretations of Daubert is reflected by the

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[5] See Ghosh (1997) for a thorough review of all the types of economic cases in which the Daubert standard has been applied. Also see Sleinger (1996) and Johnson and Ireland (1996) on how the Daubert decision may pertain to forensic economists.

Supreme Courts grant of certiorari in *General Electric Co. v Joiner, 96-188.* In this case the trial judge dismissed the plaintiffs experts while an appeal court allowed the experts testimony. The Supreme Court ruled on December 15, 1997 that appellate courts must ordinarily defer to a trial judges' ruling on admitting expert testimony.

While the above cases encompass the "hard sciences" they do provide precedents for future courts to use in other types of expert testimony such as economics. As cases pertaining to economic damages appear before lower courts, guidance from past decision (even if in the "hard sciences") will help them rule on the admissibility and reliability of economic testimony especially when that testimony is based on unfamiliar econometric techniques such as the SK model.

Since economists' testimony may rely on econometric techniques that will be unfamiliar to judges, it is important that forensic economists be able to provide a credible defense to a Daubert challenge. In Section III, an example of such an argument is provided in the case of a Daubert challenge to the methodology developed in the SK model.

III. Economic Loss to a Injured Child and the Daubert Standard

The Daubert standard of scientific acceptability creates the danger that evidence on economic damages of a child may not be admissible at trial. Since damages to a minor child is not as well grounded in the judicial system as the economic damages to an adult, courts may use Daubert as a justification for not allowing expert testimony on this matter.

In the absence of the GF and SK models defense attorneys could claim that other methods of estimating losses to a injured minor child are speculative, and, in light of Daubert, inadmissible. Knowing that courts may reject plaintiff's economic testimony may make the defense pretrial negotiation position more intransigent. However, the defense's new position may be counterbalanced if the SK model meets the Daubert standard of acceptability because both sides recognize that the economist may now testify under Daubert. The defense will be less willing to risk a trial, while the plaintiff would be more willing to go to trial, thus the chance of settlement is increased.

The first Daubert standard must show that the methodology used has wide acceptance in the economic community. Since Daubert, the courts have allowed testimony by an economist based on valid and commonly accepted statistical and multivariate analysis which have been subjected to peer review.[6] The use of econometric techniques such as the ordered probit model used by SK and GF does have wide acceptance in the economic profession.

The second Daubert standard recognizes that peer-reviewed research is a relevant criterion for determining the reliability, and hence the admissibility, of evidence.[7] The fact that both studies were published in a refereed journal, therefore, becomes important.[8]

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[6] Flavel (1994)

[7] Bernstein (1994) p 2150

[8] Courts have rejected the testimony of experts because the studies which their testimony was based on was not peer-reviewed and untestable. Hall v Baxter (1996 at 1406), and Lynch v. Merrell-National Laboratories (1987).

Economist have been dismissed because of their publication records.[9] It is also important to note that the ordered probit model has been used in other more generalized economic journals. Thus even though the SK and GF study were published in a specialized journal the techniques used have appeared in more general journals.

The third standard of admissibility of scientific testimony developed in Daubert stressed the importance of testing in deciding the relevancy of testimony.   If a model can be tested a judge will be better able to determine the relevancy of evidence as well as its reliability.   Daubert requires that the reasoning or methodology underlying the testimony be scientifically valid by having a reasonable basis in fact.   Ghosh (1997) discusses how courts, in applying Daubert to economic testimony, are more inclined to accept such testimony if it was based on empirical results rather than pure theory because the speculative element of pure theory is reduced.

The empirical evidence of SK and GF support the theory that family background characteristics influence educational attainment. The results of the ordered probit model are based on empirical observations. The probabilities of reaching alternative levels of educational attainment are calculated using data from a large heterogenous random sample of the national population. This provides consistent estimates of the probability that a child with a given set of demographic characteristics will achieve each alternative level of educational attainment. These probabilities will be helpful to the trier of the facts.

 A judge may rule that the Daubert standard of reliability and validity were not satisfied by the SK study by itself. The judge may rule this way because of unfamiliarity with the ordered probit methodology used in estimating damages to a minor child or concern with the reliability of a study based on a single sample set. Courts have rejected testimony, even though the methodology used was correct, because the hypothesis has not been subjected to more rigorous statistical testing[10] or experts did not use the appropriate sample[11] or the data was inadequate[12].   The GF study becomes an important criterion for accepting the SK model under Daubert because the results were almost identical despite the use of a totally different data set. The consistency and robustness of the SK model should be compelling statistical evidence that the SK model meets the third Daubert Standard.

The fourth standard created by Daubert is more problematic for the social sciences in general and economics specifically.   Conceptually, the fourth standard is relevant to the hard sciences but does not apply to the social sciences unless the question is asked differently. The only way an error rate can be know is if we can prove that the model is specified correctly.   It cannot be proved that any model is specified correctly. Economists can only demonstrate statistically that a given model is better specified than any particular alternative.   While the fourth Daubert standard is not literally met (actually the five standards are only suggestions for the trial court to follow) it is the best that can reasonably be expected given statistical limitations.

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[9]   In re Aluminum Phosphide (1995)
[10]   City of Tuscaloosa (1995)
[11]   Contractors v. City of Philadelphia (1995)
[12]   Scales v George Washington University (1993)

The fifth and final standard created by Daubert attempts to prevent experts from initiating research for the sole purpose of testifying in a specific case. The court in City of Tuscaloosa et al (1995) rejected economic testimony in part because the method used by the economist has only been cited and published by other economists involved in the case. As stated previously, the authors know of no case where the SK model has been used thus the empirical model was developed out of economic inquiry with no agenda for litigation, thus meeting the fifth Daubert standard of admissibility of testimony. Arguably the SK and GF studies satisfy the Daubert standards thus allowing the courts to admit evidence based on the use of this methodology. While some trivial differences between the two studies occur, both studies support the methodological approach developed by SK. As a scientific model that estimates the economic damages of a injured minor child, the SK approach seems to meet Daubert's standard of scientific acceptability.

VI Conclusion

The Daubert standard has been applied to scientific testimony with respect to the "hard sciences". Some economic testimony has also been scrutinized by the courts under Daubert. As forensic economics evolves new methods of projecting economic losses will be developed. These methods will at some point be required to meet the Daubert standard for admissibility of evidence. One new method developed in SK uses an ordered probit technique to estimate the economic damages to a injured minor child. That study was replicated with another set of data by GF arguably showing that the Daubert Standard can be met. The SK educational attainment model is useful to the legal profession because of its neutrality. For example, the court can now consider lost income for a child for different educational levels. All levels of educational attainment can be shown weighing each level by the probability (calculated by the SK model) of the child attaining that level. The jury then can decide which level of education the facts of the case support. Since the lost earnings are adjusted by the probability of attaining that level a more precise estimate is attained. These two studies increases the probability of convergence toward settlement between both sides of the dispute. The trial court as "gatekeeper" under Daubert and the jury will base their decisions on a neutral method of estimating the probability of a child attaining a certain educational level.

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