

# What's Wrong With This Report?: Handling Economic "Junk" Science

by

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Any time someone is estimating what a future sum will be, that person is producing a forecast. This is true whether one is estimating expected long-term inflation, future economic growth or expected future earnings.

Professional economic forecasters explicitly derive estimates of future economic circumstances using accepted scientific procedures.

Personal injury economists, in developing estimates of future losses, are clearly deriving implicit economic forecasts. However, in deriving such forecasts they often disregard the scientific procedures used by professional forecasters.

Professional economists rely upon scientific theories and procedures which are accepted and documented in authoritative economic literature.

Professional economists and economic experts must observe and follow such practices, particularly when engaging in a variety of litigation matters.

Personal Injury economists, however, often base their work not on authoritative economic theory, but frequently point to court decisions as the basis for their findings. Court decisions are not authoritative economic theory, and it is only through operating in a limited litigation environment that such out-of-the mainstream economists can be recognized as "experts".

In the past, the courts have intruded in numerous areas of economics, particularly with respect to interest and discount rates.

*Daubert* provides an opportunity to correct past mistakes resulting from the courts' intrusion and the subsequent abuses by personal injury economists.

# "Expert" Economic Testimony

Many techniques employed by individuals providing expert economic testimony, particularly for use by plaintiffs' attorneys, share the following characteristics:

- Simplistic methods
- Lack of reference to general practice
- Reliance upon legal rather than economic arguments

Such techniques are NOT ECONOMICS and are often merely an attempt to inflate economic damages.

## Basic Variables for Estimate Personal Injury Losses

Numerous techniques for calculating damages in personal injury cases entail estimating 5 basic variables for pre- and post-injury scenarios.

- Worklife
- Earnings
- Benefits
- Household Services
- Personal Consumption
- Earnings Growth
- Interest Rates

## Economic Assumptions of Personal Injury Economists

Though variables used by economic experts are standard, the differences in forecasts and methods used are substantial. Forecasts of personal injury economists are typically at odds with those of professional forecasters and reality. The following is a summary of selected economic variables forecast by area courtroom economists, as well as a sample of actual forecasts from DRI (earnings growth) and Blue Chip Economic Indicators (real interest rate).

Expert	Real Earnings Growth Rate	Real Discount Rate	Net Discount Rate	Fringe Benefit %
Cox	1.81%	1.85%	0.04%	7.65%
Goldstein	3.29%	1.64%	(1.62%)	\$ amount of estimated medical costs
Linke			0 - 1%	21.00%
Olson	6.01% (nom)	7.50% (nom)	1.41%	33.03% (RR)
Ward	0.70%	2.03%	1.59% *	22.09%
Imputed from DRI, Blue Chip	0.43%	3.52%	3.08%	

\* Recent change in Ward's methods resulting in increased net discount rate. Unclear if this is a permanent change or one-time application.

# Historical Net Discount Rate

The exceptionally low net discount rates used by personal injury economists are typically derived by relying on historical data. Going further back in time results in:

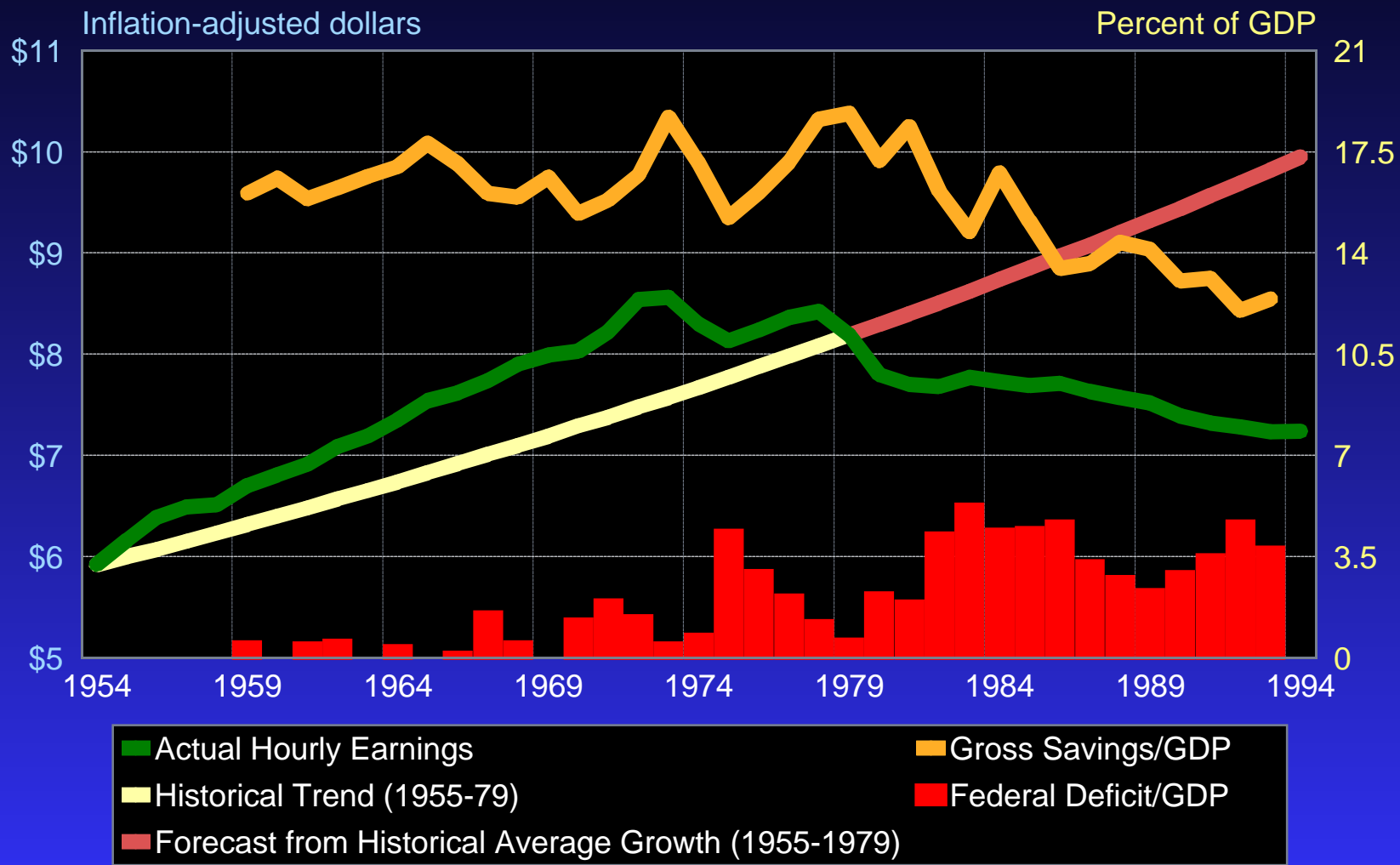
1. Lower real interest rates
2. Higher rates of real earnings growth

Though proponents of long-term historical averages claim to be merely capturing the relationship between earnings growth and interest rates, such "economists" are implicitly forecasting future earnings growth and interest rates which are wildly at odds with professional forecasters.

The final result is simply inflated damages.

# Real Hourly Earnings

As shown in the following graph, the use of historical averages as a means of forecasting results in considerable inaccuracies.



# Forecasting Process / Econometrics in Practice

The science of economic forecasting entails the following general process for developing economic models and forecasts for practical application:

1. Identify economic problem/uncertainty
2. Using economic theory, infer possible variables and relationships
3. Arrange information and assumptions into economic model
4. Develop statistical model from economic model
5. Gather data
6. Develop estimation rule with sound properties, including precision
7. Obtain estimates and test hypothesis
8. Analyze and evaluate results for implications and consistency
9. If inconsistencies exist, identify problems and suggestions for future analysis

Source: Learning and Practicing Econometrics, W Griffiths, C. Hill, G. Judge

Econometrics has evolved considerably since the 1950's. Beginning in the 1960's, the use of formal models increased with advances in both techniques and technology. With the expanded power and availability of computers, economic forecast model have become increasingly complex, powerful, reliable and widespread.

By the early 1980's, statistical modeling had become the predominant technique employed by academia and practitioners.

# Forecasting Techniques Emphasized at Business Schools

In 1983, a survey business schools found that regression analysis and other complex statistical methods were the techniques emphasized most in practical forecasting projects as part of graduate and undergraduate forecasting courses. None of the instructors surveyed indicated judgemental methods were emphasized.

Technique	Number of Responses	Percent Responding
Regression analysis	62	44
Box Jenkins	28	20
Time series	25	18
Exponential smoothing	16	11
ARIMA	9	6
Moving averages	8	6
Model selection	9	6
Autocorrelation	7	5
Census II	4	3
Judgemental methods	0	0

## Forecasting Techniques Believed Most Important

This same survey revealed that faculty members found regression analysis and multiple regression analysis to be the most important forecasting methods for graduate students to understand.

Techniques Believed "Very Important"	Percent Responding
Regression analysis	94
Multiple regression	89
Time series	53
Moving averages	45
Autocorrelation	45
Exponential smoothing	44
Autoregressive models	36
Box Jenkins	31
Adaptive filtering	18
Census II	15

# Important Criteria for Evaluating Forecasting Models

Attendees to the First International Symposium on Forecasting, held in May of 1981, cited the following criteria as being necessary for evaluating extrapolative forecasting methods.

Percent Citing Each Criterion

<b>Criterion</b>	<b>Academicians</b>	<b>Practitioners</b>	<b>Combined Total</b>
<b>Predictive accuracy</b>	<b>90%</b>	<b>84%</b>	<b>87%</b>
<b>Ease of interpretation</b>	<b>37%</b>	<b>39%</b>	<b>38%</b>
<b>Cost/time</b>	<b>34%</b>	<b>33%</b>	<b>34%</b>
<b>Ease of use/implementation</b>	<b>37%</b>	<b>24%</b>	<b>30%</b>
<b>Adaptive to new conditions</b>	<b>14%</b>	<b>17%</b>	<b>16%</b>
<b>Universality</b>	<b>4%</b>	<b>13%</b>	<b>9%</b>
<b>Capture turning points</b>	<b>7%</b>	<b>8%</b>	<b>8%</b>
<b>Robustness</b>	<b>14%</b>	<b>4%</b>	<b>9%</b>
<b>Incorporates judgemental input</b>	<b>6%</b>	<b>3%</b>	<b>4%</b>

## Comprehensive Forecasting Models

In last two decades, the following organizations have developed and maintained comprehensive forecasting models which have become the principal macroeconomic models now used by professional forecasters.

<b>Forecasting Organization</b>	<b>Number of Macroeconomic Variables Forecast</b>	<b><i>Frequency of Release, per Year</i></b>	<b>Date Forecast First Issued Regularly</b>
<b>Wharton Econometric Forecasting Assoc.</b>	<b>1000</b>	<b>12</b>	<b>1963</b>
<b>Survey of Professional Forecasters (FRB, Philadelphia)</b>	<b>20</b>	<b>4</b>	<b>1968</b>
<b>UCLA</b>	<b>1000</b>	<b>4</b>	<b>1968</b>
<b>Data Resources, Inc.</b>	<b>1200</b>	<b>12</b>	<b>1969</b>
<b>University of Michigan</b>	<b>200</b>	<b>8</b>	<b>1969</b>
<b>Georgia State University</b>	<b>540</b>	<b>4</b>	<b>1973</b>
<b>Kent Economic Development Institute</b>	<b>1700</b>	<b>12</b>	<b>1974</b>
<b>George Washington University</b>	<b>30</b>	<b>4</b>	<b>1976</b>
<b>Laurence H. Meyer &amp; Associates</b>	<b>450</b>	<b>12</b>	<b>1983</b>

# Major Economic Forecasting Organizations

The following is a survey of major organizations producing economic macroeconomic forecasts, along with a general descriptions of the types of in-house and comprehensive macroeconomic models utilized.

Organization	Type of Model	# Eq/#Variables	Other Info Used
CBO	In house econometric models, macro models from WEFA, DRI, Meyer	In house models compare of 5 or 6 variables, large macro models have hundreds of equations and forecast several hundred variables	Blue Chip Forecasts, other forecaster feedback, cyclical trends, current market information, professional experience
OMB	In house econometric models, macro models from WEFA, DRI, Meyer	Similar to CBO models	Similar to CBO, parameters imposed upon Meyer model to forecast particular variables
Chase Manhattan	Different regression models for different variable forecasts	Regression, 5 to 6 exogenous variables	Professional experience
FRB of Kansas City	Large Macro Model as well as in house econometric analysis	Over one hundred equations and variables	
1st Interstate	Large Macro Model (Meyer, Washington U.)	350 equations and 137 exogenous variables	Professional experience in specifying equations
FNMA	Meyer Model	350 equations and 137 exogenous variables	Professional experience in specifying equations
Merrill Lynch	Meyer Model	350 equations and 137 exogenous variables	Professional experience in specifying equations
Bear Sterns	Individual "models" and relationships for each forecasted variable	Variables analyzed within relationship of one or two exogenous variables	"Fed watching", professional judgement, expectations of market reactions
New York Life	Individual models for each forecasted variable	Variables analyzed in model incorporating two or three leading indicators and cyclical patterns	Current market information, "proprietary relationships", professional judgement
Banc One	Each variable is forecasted separately, no "specific" model	Each forecasted variable is analyzed in relation to several related variables	Professional judgement about economic relationships and current market information
Standard & Poor's	Use in house econometric models and DRI Macro model	Individual in house models use 3 or 4 exogenous variables, DRI model	Professional judgement and consultation with other forecasters

In addition to accurately depicting historical results, economic models must be capable of capturing important economic developments, particularly those from recent decades. Such developments include:

- The impact of increasing government borrowing on real interest rates
- Slower productivity growth, due in large part from a declining net savings rate in the United States
- The impact of a greater supply of domestic labor as work-force participation rates increase
- The increasing globalization of jobs and competition for labor
- The declining influence of labor unions
- Concentration of earnings growth among individuals with advanced degrees

Forecasts based strictly on "long-term" trends fail to account for such developments.

Other "economic" flights  
of fancy ...

## Valuing of the Life of a Child

Analyses which attempt to value the life of a child (generally used in wrongful death cases brought by parents) are fundamentally flawed.

- Fundamental disagreements exist even upon the theoretical constructs, namely whether children are "investment goods" for which parents receive "returns" or whether they are "consumption goods" on which parents spend money for enjoyment and satisfaction.
- There is no accepted theory upon which such analyses are based, nor is there a way the value of a child's life can be quantified.
- An economist claiming to base a pecuniary calculation of the value of a child on economic theory has either made up the theory himself or corrupted work of other economists whose work was never intended to determine dollar amounts.
- Costs and benefits are both economic and psychic/emotional.
- Such valuations are essentially an attempt to assign pain and suffering as an economic loss, thereby by-passing tort reform.

One personal injury economist has attempted to value the life of a child based upon fertility theory and the writings of Gary Becker. This economist's analysis centers on the premise that there is an "investment value" of a child and that the estimated costs of raising a child through age 18 are equal to the parents' expected future benefits. However:

- Becker's writing is a broad-based theoretical analysis covering numerous family related topics not specifically related to the value of a child.
- There is no accepted method of estimating the costs of raising a child. As there are no good substitutes for children, speculative and arbitrary proxies must be created, such as lost leisure time, lost career paths and lost income.
- There is even less agreement on how to quantify the benefit of having a child.
- Most are based upon controversial fertility theories of ex ante expectations of benefits and costs.
- The assumption that ex ante expected costs are equal to ex post benefits is without foundation.
- The theory that costs can proxy for expected future benefits is without support.

Aside from these substantial methodological problems, the reports generated by this economist for specific litigation are also contrary to his own published writings.

- Though his published work states that the "investment" approach is a "proxy" or alternative to estimating parental monetary benefits from a child's earnings later in life, this economist sums these two estimates in arriving at damages in litigation work, a clear double-count.
- In his writings, he states that to arrive at monetary benefits, a child's expected earnings must be adjusted both for personal consumption and for the probability of staying at home. Yet in his litigation work, he only adjusts monetary sums by one or the other, not both.
- Though his writings state that the timing of benefits to the parent is "outside the realm of economics", computations in his litigation work clearly include timing. This is particularly the case since his analysis implies that parents receive no benefit from having a child until after the child's death.
- Note that to address this discrepancy, the economist later asserted that the pain of looking back on time shared with the child offsets any past benefit, thereby implying that parents grieve for their children in proportion to the child's age.

# Hedonic Damages

Analyses which purport to estimate the damages from a diminished or lost "joy of living" are similarly flawed.

- This remains a very controversial subject with most serious economist disagreeing with advocates of hedonics
- Hedonic damages are typically awarded to punish the defendant, thereby acting as a vehicle for deterrence/incentives
- It is essentially another means to re-define pain and suffering, thus skirting tort reform
- Estimates indicate that hedonic damages, if applied, could consume 10% to 15% of GDP
- Studies cited to justify or quantify hedonic awards are fraught with substantial and insurmountable statistical problems

Analyses quantifying hedonic damages are typically based upon erroneous risk reduction studies.

- One cannot assume that costs incurred in avoidance of injury equal the value of life
- Quantifying risk avoidance is based on the unfounded assumption that there are no changes in safety standards
- Costs driven by safety standards do not reflect the value of life or a risk/reward trade-off, which is confirmed by the present debate on regulatory reform
- Risk/reward trade-offs cannot be inferred from wages, which primarily reflect supply of and demand for labor
- In addition, assuming that workers are fully knowledgeable of job risks is contrary to reality
- The division of the benefits, from reduced risk, between employer and employee is unknown

Though estate value has also been used in hedonics, there is simply no way to assert that such computations reflect losses to survivors.

# How to Handle Personal Injury Economists

Plaintiffs' personal injury economists often attempt to support their conclusions with the written opinions of other personal injury economists (sometimes even citing their own written work).

- Confront plaintiff's economist's conclusions with the conclusions of the country's leading economists.
- Challenge the plaintiff's economist's credentials with those of major professional economists.
- Hire an economist to "sharp-shoot" the uneconomic assumptions of the plaintiff's economist.