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Forensic Economics: A Perspective and An Agenda for Research

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I. Introduction: Economics and the Law

Kenneth Boulding (1958), writing in the 1950s, observed that "an economist may carry over part of his skill into the solution of practical problems of political or domestic life." Boulding's chide of the abstraction and detachment he observed in economic analysis was an attempt to promote a greater involvement by economists in other disciplines. The focus of this paper is the application of economic analysis to the law. As it will be shown, there are two basic applications of economics to the law. The first flows from welfare economics and represents an economic analysis of the efficiency of the law. The second deals with the measurement of economic damages arising from litigation.

At first thought an amalgam of economics and law presents obvious difficulties. The law rests on a traditional, moral base. It has derived from the codification of systems of dispute resolution and the evolution of common law and democracy. It is normative in perspective and ascientific in methodology.

Economics, by comparison, is viewed as a positivistic and scientifically rigorous discipline. It is perceived as having no moralistic base and it is generally indifferent to normative issues in its purist form. The objectives of economists are typified by such concepts as Pareto Optimality and Market Efficiency, rather than "right" or "Wrong."

However different their perspectives, law and economics are, nevertheless, joined by one common objective -- the enhancement of social welfare. Both disciplines recognize that such an enhancement represents a balancing of private interests and public interests. Moreover, both disciplines rest on a basic concept of "property rights."

This common objective and base is the subject of rich literature in the field of welfare economics. The focus of this literature is the economic efficiency of laws within a system of property rights. The methodology employed involves a balancing of possible aggregate benefits and costs in alternative resolutions to a given legal dispute in order to specify the economically optimal resolution.[1]

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[1]See Ronald H. Coase, "The Problem of Social Cost," Journal of Law and Economics Vol. 3 (1), 1960; and Richard A. Posner, Economic Analysis of the Law, 3rd edition (Boston: Little, Brown & Co.) 1986, or A. Mitchell Polinsky, An Introduction to Law and Economics (Boston: Little Brown & Co.) 1983, for general reviews of this methodology.

This methodology is typified by the example of a factory whose pollutants damage the laundry being dried outdoors by three neighboring households. The pollutants cause $150 in damages to each household, a total of $450. The damage can be eliminated through the factory's installation of a smoke filter for $300 or through the households' purchase of clothes dryers for $125 each, for a total of $425.

If the households were granted a "right" to clean air then the firm would have three potential resolutions to the dispute: pay damages of $450, install a filter for $300, or purchase three clothes dryers for $425. Obviously, if given the choice, the firm would install the filter. This is the most efficient solution. Moreover, this solution would not necessarily be effected by the granting of property rights. If the factory were given the right to pollute the home owners would face the alternative of suffering $450 in damages, buying clothes dryers for $425 or purchasing a filter for the factory for $300. In the absence of any transaction costs they would purchase the filter, the economically efficient solution. However, if transaction costs are significant, and it would cost $50 for each household to negotiate an agreement, then the most efficient societal solution (the installation of a filter) could not be attained. In this case the legal placement of liability and rights is critical to the attainment of efficiency. This analytical framework incorporates the "Coase Theorem," developed in an article by Ronald Coase in 1960, and is easily expanded to consider a wide variety of potential legal disputes.[2]

This basic model can be expanded to incorporate the risk preferences of the actors and the transaction costs of potential solutions. This "welfare economics" approach represents an important contribution to both economics and the law and has had a considerable impact on our system of jurisprudence. That impact can be seen in "no-fault" automobile insurance laws, environmental protection laws and the recent debates over Tort Reform in the United States.

Again, the focus of this application of welfare economics to the law is the efficiency of the law. This focus is not the primary concern of the forensic economist.

II. Forensic Economics

The primary focus of the research of the forensic economist is the measurement of market loss (damages) arising from market failures, contract disputes or Torts. Taking the law as given, the forensic economist applies economic theory to problems of valuation presented in litigation. This does not mean that the forensic economist is a passive agent in the legal process -- simply an expert. Through the application of more rigorous tools of measurement and prediction of damages in litigation, the forensic economist complements the research of the welfare economist. Given more accurate measures of damages resulting from Torts,

[2]See Henry G. Manne, The Economics of Legal Relationships: Readings in the Theory of Property Rights, (St. Paul: West), 1975, for such examples.

contract disputes or market failures, the comparisons of the economic efficiencies of alternative resolutions become more attainable.

Forensic economics can roughly be separated into two divisions. The first division involves the analysis of public interest disputes such as public utility rate disputes, anti-trust, or environmental law violations. In these disputes, potential damages accrue to the general public. These "market-failure" problems are the subjects of considerable literature, and represent a mainstream component of traditional market theory.[3]

The second division of forensic economics involves the measurement of damages arising from "private interest" disputes -- civil law. Such disputes might stem from a breach of contract (contract law), the division of assets in a marriage (family law), or through a Tort. A Tort is defined as any private or civil wrong (not involving a breach of contract) for which a civil suit can be brought. Examples of such Torts would be a medical malpractice claim, a personal injury or death resulting from an automobile accident or the use of a defective product or an injury on a job. This division of damage calculations is the most rapidly growing area of forensic economics and an area of considerable controversy.

Economists involved in forensic consulting may perform work in all of the above areas of valuation, although "public interest" consulting is an area of considerable specialization. More commonly the first exposures of an economist to forensic consulting are in the area of Torts and contract disputes (business valuation).

Business valuation follows fairly well prescribed procedures, but nevertheless involves considerable economic analysis, especially in projecting future damages.[4]

In personal injury and death litigation the object of valuation is the value of a life. Damages are measured utilizing the economist's concept of "market value," either directly measured or measured by various substitutes or surrogates. During the past decade the expert testimony of an economist in such litigation has become virtually mandatory in some states.

III. Problems of Valuation

When an individual has been wrongfully disabled or killed the economist is called on to answer the difficult question: What is the market value of that person's foregone future earnings and services reduced to present value? Moses, facing the same problem, received the following message:

[3]For general discussions of these issues see Richard A Musgrave, The Theory of Public Finance: A Study of Public Economy, 1959, or William J. Baumol, Welfare Economics and the Theory of the State, 1965.

[4]See M. Gordon, Investment, Financing and Valuation of a Corporation, 1962 for a statement of this process.

> The Lord spoke to Moses saying: Speak to the Israelite people and say to them: When a man explicitly vows to the Lord, the equivalent for a human being the following scale shall apply: If it is a male from 20 to 60 years of age, the equivalent is fifty shekels of silver by the sanctuary weight; if it is a female, the equivalent is thirty shekels. [Leviticus 27:1-4]

In the absence of divine inspiration the economist can rely on a variety of micro-economic tools in such evaluations.[5]

The basic principles used in projecting the market values of lost or impaired earnings in the most simple case would involve:[6]

1. The selection of an appropriate base earnings for the individual.
2. The addition of actual or probable employer paid fringe benefits.
3. The projection of these earnings over the individual's probable worklife.
4. The reduction of future earnings for probable future rates of employment, labor force participation, life earnings trends, or annual probabilities of death.
5. In the case of a death, the reduction of earnings loss for the deceased's self-consumption.
6. Finally, a reduction of this future, adjusted earnings capacity to a present value which if invested now would equal the future earnings loss stream.

In cases involving the death of a child, where the survivors are parents, loss can be adjusted by the probability of the child remaining at home. Household services, council and guidance can be valued using a market replacement cost or opportunity cost proxy. This valuation of the human activities lost or impaired as a result of a Tort is only limited by the ability of the economist to place reasonable market values on time.

Each of the above steps in the valuation process has been the subject of significant refinements, and controversy over the past two decades as the model has been extended. The remainder of this paper will review

[5]It should be pointed out that the economist's opinions will be constrained by state and federal laws. Some states place severe restrictions on the admissibility of economic testimony. In some states, only a husband can recover the value of a housewife's services. Testimony on future inflation may be inadmissible. The procedures for the recovery of damages in the death of a child vary considerably among the states, as does the treatment of taxes in determining lost disposable earnings.

[6]For several early examples of these principles see: Philip Eden, "The Use of Economists and Statisticians in Impaired Earnings Capacity Cases," The Practical Lawyer, Vol. 3, March 1964; Norman Leonard, "The Measurement of Damages: An Economist's View," Ohio State Law Journal, Vol. 31, No. 4, 1970 or, Cornelius Peck and William S. Hopkins, "Economics and Impaired Earnings in Personal Injury Cases," Washington Law Review, 351, 1969. A list of more recent articles on this subject is in the appendix to this paper.

areas of refinement and suggest an agenda for future research in forensic economics.

IV. An Agenda for Research

During the past two decades many articles and books have been written addressing issues in forensic economics. The focus of this literature has generally centered on one of three areas: (1) methodological discussions of technique and economic theory; (2) the consideration of loss in an individual jurisdiction; or (3) discussions of how to use the economist as a witness. The appendix attached to this paper gives a partial list of the most recent articles written in the area of methodological concerns.

A. Methodological Issues

The predominant technical issue in the literature regarding death and disability cases is that of the selection of a projection and discounting technique. A variety of techniques have been advanced to yield the "truth" regarding the exact compensation due to the plaintiff. Future research in this area must focus on simulation studies of the accuracy of alternative projection techniques. Further, the techniques of determining a real rate of interest are almost as numerous as the number of economists advocating their use. A vigorous analysis of these techniques should carry a high priority.

The second most discussed technical issue in the literature deals with the issue of how taxes should be considered in evaluating economic loss. Authors' conclusions range from a contention of unilateral reduction of lost income for taxes, to a counter that the survivors in a death case might have to pay more taxes after the death than they would have had the person not died. In light of recent federal and state court rulings, these issues must be examined in much greater detail.

A third methodological issue, covered only marginally in the literature, but worth of further debate, is the issue of econometric projection techniques versus alternative "historical" projecting techniques. Allied with this is the responsibility of the economist to address such issues as the statistical reliability of estimates.

A subject little noted in journals, involves the consideration of attorney's fees and collateral source income in evaluating lost earnings capacity. Generally, the law does not allow economists to consider these additions or deletions to earnings loss, yet the objective of the economist is to estimate the value of the loss to the plaintiff. Does a 1% interest rate differential really matter, for example, when attorneys may be taking 40-50% of the judgment?

B. Trial Techniques and Specific Laws

A second series of articles addresses "how to" issues of utilizing the economic expert within the context of specific state tort laws. The subjects of such articles, usually found in legal journals, deal with the following:

a) How to present witnesses and how to explain economics to jurors.
b) How to challenge the expert, and how to cross-examine the economist.
c) How to measure the loss (i.e. what items to consider) using state case law.
d) Rules of testimony in a given state.

While these topics are important in that they expand the use of economic testimony, they also tend to have limited use across jurisdictions.

C. Other Areas of Valuation in Death and Disability Cases

Aside from the technical issues of projection, discounting, taxes, and the issues of particular state or Federal law, a number of areas relating to people's lifetime income and expenditures must be considered to give a realistic appraisal of loss. Those issues, which have been debated in the journals in various degrees, are outlined in the following paragraphs.

Worklife expectancy is critical in valuing lost earnings. Is the assumption of retirement at age 60, 62, 65, or 70 a legitimate assumption or is there a better way of estimating worklife expectancy? The most recent worklife tables from 1982 are based on data which was developed prior to Federal legislation which eliminated many mandatory retirement rules.[7] Despite this federal legislation, the labor force participation rates for males age 55-64 continues its downward descent. We need more information on overall retirement behavior of workers, and we particularly need more information on average retirement ages for individual occupations.

Valuing the economic loss of minor children is particularly difficult. The economist who examines a loss claim of parents for the death of a child finds the rather grim conclusion that, on a market value of production basis, the parents may be financially better off without the child. However, it is a necessary conclusion if we find ourselves on the other side of the aisle testifying that because the sterilization operation didn't work, this family now has an extra mouth to feed. How can the economics of this situation be addressed? The Agriculture Department has published figures on the costs of raising a child,[8] and this data can be used as a base for estimating parents "investment" in a child. Human resource investment or utility measures of value lost may be more representative of loss in these cases.

In the area of partial disability, economists generally agree on two things: (1) economists themselves do not ordinarily have the technical

[7]See: U.S. Department of Labor, Bureau of Labor Statistics, "Worklife Estimates: Effects of Race and Education," Bull. 2254, Feb. 1986.

[8]See: U.S. Department of Agriculture, Agricultural Research Service, "USDA Estimates of the Cost of Raising a Child," Misc. Publication 1411, 1981.

skills to rate occupational disability; and (2) physicians don't have those skills, either. Medical disability ratings do not translate to occupational disability ratings and are useless in that regard. The Social Security Study[9] of disabilities and earnings from the 1970s is useful, but the trained work of the occupational or vocational specialist is most helpful in providing a basis for testimony. A blending of research on the relationships of medical disability to earnings capacity should be a high priority for forensic economists.

In wrongful death cases the loss to the survivors requires an estimation of personal consumption expenditures of the deceased. Absent the time consuming, and, in some cases impossible, job of reconstructing a deceased person's actual family expenditures, the economist must estimate the marginal consumption of the deceased. The data in the Revised Equivalence Scale[10] is 25 years old: are other more recent studies able to give us information on individual family member consumption? How should the savings patterns of individuals be determined? Values of estates become issues in some cases, and without knowledge of saving patterns, estate valuation is somewhat difficult. Several economists have raised the issue of post-retirement consumption as an issue that is sometimes overlooked in valuing loss to survivors.

In severe disability cases future medical expenses are a critical component of the total loss. These costs have increased at rates far greater than other prices and indeed at rates higher than interest rate levels. Can this continue, and how can the plaintiff be protected without overestimating the loss? Forensic economists must continue research in the area of medical economics and future market and price outcomes.

Many disabled or deceased workers are self-employed. Should economists value the business in determining loss, or simply view the accounting profit as a wage proxy? How should the wage and profit components be separated, and what considerations are necessary to exclude property (non-labor) income? One of the most difficult of issues in this area is the valuation of farm income, where many times taxable income is unreasonably low or nonexistent. The concept of opportunity cost may be a more appropriate device for measuring loss in such cases. However, few economists have attempted to address these issues.

Much attention has been given to a discussion of the services provided by household members and their value. The literature has provided a substantial amount of debate on this issue, including the opportunity cost approach, versus the market replacement cost approach. Are these adequate to describe the loss to the family? How are changing work patterns of family members altering their contributions around the home?

[9]See: U.S. Department of Health and Human Services, Social Security Administration, 1978 Survey of Disability of Work, Data Book, Nov. 1982.

[10]See: U.S. Department of Labor, Revised Equivalence Scale, Bull. 1570-2, Nov. 1968.

Finally, as forensic economists have come to be involved with other civil cases (including property valuation in divorce cases and in business valuation), there is need for continuing discussion of the issues of property rights and business evaluation techniques.

V. Conclusion

Forensic economics is both new and old. The corn law debates of Malthus and Ricardo occurred in an arena of the law. The applications of Robinson's monopoly theory were felt as immediately in our nation's courts as in our classrooms. Human resource valuation, although a relatively new economic discipline, has won substantial acceptance in the law. Economists must continue to pursue the issues regarding the differences between what is legally permissible and what is economically correct. By so doing, the profession can contribute significantly to the theory of economic welfare and to the application of that theory to practical problems in litigation.

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Appendix

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