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Edited by Phyllis Schiller Myers  
Virginia Commonwealth University

### BARGAINING THEORY

*The Importance of Others' Welfare in Evaluating Bargaining Outcomes*, by Kim P. Corfman (New York University) and Donald R. Lehmann (Columbia University)

This research proposes that negotiators consider each other's payoffs in their evaluation of potential settlements beyond the level necessary to maintain the bargaining relationship. We further hypothesize that the way in which negotiators weight their opponents' payoffs, relative to their own, is a function of characteristics of the relationship and of the bargainers' personalities. Specifically, we consider liking of the other party, payoff expectations, satisfaction with past settlements, the likelihood of future negotiations, egocentricity, and power orientation. We demonstrate the impact of these factors on the satisfaction negotiators derive from profiting more and less than their opponents using data from an experiment in which subjects negotiate with computer-simulated opponents. *Journal of Consumer Research*, June 1993, 20(1): 124-137. (Reprinted with permission of *Journal of Consumer Research*.)

*A Laboratory Analysis of Bargaining Power in a Random Ultimatum Game*, by Barry Sopher (Rutgers University)

The experiment reported on here was designed to test the stability of bargaining power with respect to the distribution of disagreement payoffs in a two-person bargaining game. The "random ultimatum" design allows one to make inferences about players' expectations concerning demands acceptable to the other player, and to isolate those demands that are unacceptable to bargainers. The results indicate that such expectations vary with the distribution of disagreement payoffs. Players with different disagreement payoffs make different demands and accept demands in a systematically different way, related to the expected earnings implied by the players' initial demands. *Journal of Economic Behavior and Organization*, May 1993, 21(1): 69-90. (Reprinted with permission of North-Holland Publishing Company.)

***Efficient Sequential Bargaining***, by Lawrence M. Ausubel and Raymond J. Deneckere (Northwestern University)

Suppose that a seller and a buyer have private valuations for a good, and that their respective utilities from a trading mechanism are given by  $u_s$  and  $u_b$ . (These utilities are determined by the valuation for the good, by whether a trade occurs, and by the price which is paid.) Consider the problem of maximizing  $E[\lambda u_s + (1-\lambda)u_b]$  for some weight  $\lambda$  in the unit interval. It is shown in this article that, if  $\lambda$  is sufficiently close to zero or one, then the maximum value of this objective function attainable by a static revelation mechanism can be arbitrarily closely approximated by equilibria of the sequential bargaining games in which only a single player makes offers. That is, the welfare bound implied by the revelation principle is virtually attainable in offer/counteroffer bargaining. The main condition needed for this result is a monotone-hazard-rate assumption about the distribution of types. A class of examples is presented in which the result holds for all  $\lambda$  (i.e. the entire ex ante Pareto frontier). *Review of Economic Studies*, April 1993, 60(2): 435-461. (Reprinted with permission of the *Review of Economic Studies*.)

## 9 RISK PERCEPTION AND ECONOMIC BEHAVIOR

***The Peculiar Scale Economies of Lotto***, by Philip J. Cook and Charles T. Clotfelter (Duke University)

Lotto is a pari-mutuel gambling game of long odds and large jackpots. In 1989 it was offered by 29 of 33 state lotteries, accounting for 40 percent of lottery sales. Lotto is unlike the other popular lottery games (numbers and instant) in that there is a strong tendency for per capita lotto sales to increase with the size of the population base. As a result, smaller states have found it advantageous to form consortia for the purpose of offering a multistate lotto game. Two such consortia are currently in operation.

What is the source of this scale effect in lotto? With a larger population base comes larger jackpots, but the probability of winning a share of that jackpot is correspondingly lower; the larger lotto games offer riskier prospects with the same expected value as the smaller games. We suggest that the allure of the larger games may be understood by considering the sort of data that are readily available to bettors. The size of the jackpot is widely advertised, as is the outcome of each drawing with respect to the number of winners. If players tend to judge the likelihood of winning based on the frequency with which someone wins, then a larger state can offer a game with longer odds but with the same perceived probability of winning as a smaller state. The larger population base in effect conceals the smaller probability of winning the jackpot, while the larger jackpot is highly visible. This interpretation is congruent with prospect theory.

The scale effect evident in lotto presents an interesting contrast to the scale effect in insurance markets. In insurance markets, a wider pool lowers costs by reducing risk premiums to investors. While the widespread aversion to risk in investment instruments produces economies of scale in an insurance pool, the widespread preference for risk in gambling instruments produces economies of scale in lotto.

Our analysis of lotto begins with a brief description of the game and a theoretical account of the economies of scale. The premise is that the size of the jackpot matters to lotto players more than the probability of winning. If true, then per capita lotto sales will increase with the size of the state population. Subsequent sections report empirical results which demonstrate the validity of this implication. These results provide a basis for predicting sales of a multistate lotto consortium. We also report an analysis of time-series data for Massachusetts, with an estimate of the "jackpot elasticity of demand" in that context. In Section IV the implications for lotto design are briefly developed. *The American Economic Review*, June 1993, 83(3): 634-643. (Reprinted with permission of *The American Economic Review*.)

### **Standard Risk Aversion**, by Miles S. Kimball

This paper introduces the concept of *standard risk aversion*. A von Neumann-Morgenstern utility function has standard risk aversion if every risk that has a negative interaction with a small reduction in wealth also has a negative interaction with any undesirable, independent risk. It is shown that, given monotonicity and concavity, the combination of decreasing absolute risk aversion and decreasing absolute prudence is necessary and sufficient for standard risk aversion. Standard risk aversion is shown to imply not only Pratt and Zeckhauser's "proper risk aversion" (an undesirable risk always remaining undesirable in the presence of an independent undesirable risk), but also that being forced to face an undesirable risk reduces the optimal investment in a risky security with an independent return. *Econometrica*, May 1993, 61(3): 589-611. (Reprinted with permission of *Econometrica*.)

## 10 **UTILITY THEORY**

***Distribution Theory for the Analysis of Binary Choice Under Uncertainty with Nonparametric Estimation of Expectations***, by Hyungtaik Ahn (Virginia Polytechnic Institute and State University) and Charles F. Manski (University of Wisconsin-Madison)

In analyzing discrete choice under uncertainty, the practice has been to specify expectations and preferences up to a finite-dimensional parameter. Recently, Manski proved the consistency of a two-state, semiparametric estimator applicable if expectations are fulfilled and are conditioned only on variables observed by the researcher. The first stage estimates expectations nonparametrically, and the second stage uses choice data and the expectations

estimate to make parametric, quasi-maximum-likelihood inference on preferences. This paper proves that the estimate of preference parameters converges at rate  $\sqrt{N}$  to a limiting normal distribution if the expectations estimate is chosen appropriately. The estimate is  $\sqrt{N}$ -asymptotically unbiased. Its asymptotic variance exceeds the inverted Fisher information for the preference parameter. *Journal of Econometrics*, April 1993, 56(3): 291-321. (Reprinted with permission of North-Holland Publishing Company.)

***A Model of Decision Making Under Bounded Rationality***, by Kent D. Wall (Naval Postgraduate School, Monterey, California)

A model of decision making under bounded rationality is presented that combines satisficing behavior with learning and adaptation through environmental feedback. The aspirations, or goals, of the decision maker dynamically adjust in response to the observed sequence of past decisions and their corresponding effects on the decision maker's objective function. A simple linear response model is employed to represent the beliefs of the decision maker concerning the causal connection between his/her decisions and the resulting objective function value. The combination of these simple elements yields a decision process model rich in dynamic behavior; it can exhibit optimizing behavior in the long-run and chaotic pseudo-random search in the short-run. As such, the model bridges the gap between substantive rationality and procedural rationality. *Journal of Economic Behavior and Organization*, April 1993, 21(3): 331-352. (Reprinted with permission of North-Holland Publishing Company.)

***Attitude Towards Risk: An Empirical Demonstration of Context Dependence***, by Mir Anjum Altaf (University of Karachi, Pakistan)

Following the breakdown of the consensus that marked the theory of choice under uncertainty there is an increasing realization of the importance of context-specific considerations in explaining risk preferences. This paper provides experimental evidence that one such consideration, the relative level of success with which participants enter a game, has a significant influence on attitudes towards risk. *Journal of Economic Behavior and Organization*, May 1993, 21(1): 91-98. (Reprinted with permission of North-Holland Publishing Company.)

***Decision Field Theory: A Dynamic-Cognitive Approach to Decision Making in an Uncertain Environment***, by Jerome R. Busemeyer (Purdue University) and James T. Townsend (Indiana University)

Decision field theory provides for a mathematical foundation leading to a dynamic, stochastic theory of decision behavior in an uncertain environment. This theory is used to explain (a) violations of stochastic dominance, (b) violations of strong stochastic transitivity, (c) violations of independence between alternatives, (d) serial position effects on preference, (e) speed-



the collective risk model can easily be modified to improve its calculation accuracy. A numerical example elucidates this. *Astin Bulletin*, May 1993, 23(1): 23-54.

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***Predictive Stop-Loss Premiums***, by Werner Hürlimann

Based on a representation of the aggregate claims random variable as linear combination of counting random variables, a linear multivariate Bayesian model of risk theory is defined. In case of the classical risk theoretical assumptions, that is conditional Poisson likelihood counting variates and Gamma structural density, the model is shown to identify with a Bayesian version of the collective model of risk theory. An interesting multivariate credibility formula for the predictive mean is derived. A new type of recursive algorithm, called three-stage nested recursive scheme, allows to evaluate the predictive density and associated predictive stop-loss premiums in an effective way. *Astin Bulletin*, May 1993, 23(1): 55-76.

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***A Class of Conjugate Priors with Applications to Excess-of-Loss Reinsurance***, by Ole Hesselager (University of Copenhagen)

We consider the problem of forecasting the total cost of claims in excess-of-loss reinsurance. The number of claims reported to the direct insurer is assumed to follow a Poisson law, and the claim severities are modelled by a Pareto distribution. The Poisson frequency as well as the Pareto parameter will be considered as random parameters in a Bayesian setting. We derive the class of conjugate joint prior distributions, which turn out to specify a (prior) dependence between the two parameters. The use of conjugate priors facilitates the mathematical analysis, and it also makes it easy to interpret the parameters of the prior distribution. *Astin Bulletin*, May 1993, 23(1): 77-93. (Reprinted with permission of *Astin Bulletin*.)

***Prediction of Outstanding Liabilities in Non-Life Insurance***, by Ragnar Norberg (University of Copenhagen)

A fully time-continuous approach is taken to the problem of predicting the total liability of a non-life insurance company. Claims are assumed to be generated by a non-homogeneous marked Poisson process, the marks representing the developments of the individual claims. A first basic result is that the total claim amount follows a generalized Poisson distribution. Fixing the time of consideration, the claims are categorized into settled, reported but not settled, incurred but not reported, and covered but not incurred. It is proved that these four categories of claims can be viewed as arising from independent marked Poisson processes. By use of this decomposition result predictors are constructed for all categories of outstanding claims. The claims process may depend on observable as well as unobservable risk characteristics, which may

change in the course of time, possibly in a random manner. Special attention is given to the case where the claim intensity per risk unit is a stationary stochastic process. A theory of continuous linear prediction is instrumental. *Astin Bulletin*, May 1993, 23(1): 95-115. (Reprinted with permission of *Astin Bulletin*.)

***Moving Weighted Average Graduation Using Kernel Estimation***, by John Gavin, Steven Haberman, and Richard Verrall (The City University, London)

This paper explores the link between moving weighted average graduation and kernel estimation. A new kernel estimator for graduation is studied and an optimal smoothing kernel derived. This gives results which are very similar to Spencer's 21-term formula, if the appropriate bandwidth is chosen. The advantages of the kernel approach are discussed and the methods are applied to the English Life Tables Number 14. *Insurance: Mathematics and Economics*, April 1993, 12(2): 113-126. (Reprinted with permission of North-Holland Publishing Company.)

## \i) RUIN THEORY

***Ruin Probabilities in the Compound Binomial Model***, by Gordon E. Willmot (University of Waterloo)

In this paper explicit formulas are derived for finite time ruin probabilities in the discrete time and state-space compound binomial model using the technique of generating functions. Ultimate ruin probabilities are then obtained, and a close connection is established with the ultimate ruin probabilities in the usual compound Poisson model when the claim severity distribution is a (truncated) mixed Poisson distribution. *Insurance: Mathematics and Economics*, April 1993, 12(2): 133-142.

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***On the Distribution of the Claim Causing Ruin***, by David C. M. Dickson (Heriot-Watt University)

We extend the work of Dufresne and Gerber (1988) by developing expressions for the distribution function of the claim causing ruin in the classical compound Poisson process. We consider the special case when the initial surplus is zero, as well as illustrating results when the initial surplus is positive. We also consider a discrete time risk model and show how the distribution can be calculated by a recursive method. *Insurance: Mathematics and Economics*, April 1993, 12(2): 143-154.

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## 14 HEALTH CARE

***Cost Effectiveness/Utility Analyses: Do Current Decision Rules Lead Us to Where We Want to Be?*** by S. Birch and A. Gafni

Despite the growing literature on economic evaluation of health-care programs, little attention has been paid to the theoretical foundations of cost-effectiveness and cost-utility analyses and the validity of the decision rules adopted as methods of achieving the stated goals. The authors show that although applications of the techniques can be used to pursue some managerial objectives in the context of highly constrained environments, such applications are inconsistent with both welfare economic objectives and the interpretations of the findings of these applications. Alternative strategies are identified as potential and practical methods for pursuing welfare economic objectives. *Journal of Health Economics*, October 1992, 11(3): 279-296. (Reprinted with permission of the *Journal of Economic Literature*.)

***Implications of Basing Health-Care Resource Allocations on Cost-Utility Analysis in the Presence of Externalities***, by R. J. Labelle and J. E. Hurley

Cost-utility analysis is increasingly being advocated as a tool for helping to establish funding priorities among programs and services in the health-care sector. As currently conducted, however, cost-utility analysis is problematic as a basis for achieving allocative efficiency because it excludes externalities. The exclusion of externalities may bias program ranking in unpredictable ways, leading to a nonoptimal allocation of resources. Consideration of externalities also raises a number of distributional issues for the evaluation of health services and highlights the importance of developing economic evaluation methods that are consistent with the conceptual basis for allocating resources. *Journal of Health Economics*, October 1992, 11(3): 259-277. (Reprinted with permission of the *Journal of Economic Literature*.)

***The Ethical Impacts of Managed Care***, by George W. Rimler (Virginia Commonwealth University) and Richard D. Morrison (Virginia Department of Health Professions)

In an attempt to gain some control over ever escalating health care cost, many organizations have moved to a managed care concept of health benefits. Managed care health benefit strategies account for well over 90 percent of all employer sponsored health benefit programs.

In essence, managed care coverage usually demands, at a minimum, some form of utilization review in regard to provider services. Thus the privacy of the traditional doctor patient relationship must inevitably be modified when managed care enters the picture.

This paper provides a framework for analyzing the managed care phenomenon as well as surfacing ethical questions and issues that will continue to arise

as managed care grows. *Journal of Business Ethics*, June 1993, 12(6): 493-501. (Reprinted with permission of *Journal of Business Ethics*.)

## 15 GOVERNMENT INSURANCE PROGRAMS

***Forbearance and Valuation of Deposit Insurance as a Callable Put***, by Linda Allen (Baruch College) and Anthony Saunders (New York University)

Previous research evaluating deposit insurance as a put option has ignored the ability of the deposit insurer (put writer) to control the timing of the put's exercise via closure decisions. We model deposit insurance as a callable put, i.e., a put option where the FDIC retains a valuable call provision. The value of deposit insurance subsidies can therefore be measured as the net difference between the put and call features of the insurance contract. Forbearance can be viewed as forfeiture by the deposit insurer of the value of its call component of the deposit insurance option. *Journal of Banking and Finance*, June 1993, 17(4): 629-643. (Reprinted with permission of North-Holland Publishing Company.)

## 16 SOCIAL ASPECTS OF INSURANCE

***Should the Government Provide Catastrophic Insurance?*** by Thomas M. Selden (Syracuse University)

This paper examines the public provision of health insurance for high severity illness. Besley (*Journal of Public Economics*, 1989, 39: 141-156) argues that public coverage of high severity illness may interact with private coverage for low severity illness so as to increase welfare. The possibility of interaction between public and private coverage raises important questions for mixed systems, as in the United States. Nevertheless, even within the more general framework presented in this paper there are no welfare gains of the sort Besley envisions. *Journal of Public Economics*, June 1993, 51(2): 241-247. (Reprinted with permission of North-Holland Publishing Company.)

## 17A LIFE CYCLE MODELS AND SAVINGS

***Life-Cycle and Altruistic Theories of Saving with Lifetime Uncertainty***, by Michael Kuehlwein (Pomona College)

This paper examines testable implications of the life-cycle theory of saving with lifetime uncertainty. Theory suggests that persons facing lower mortality rates should exhibit greater consumption growth. Nonparametric tests, using the Retirement History Survey, provide mixed support for the theory. A parameterized model allowing for altruism provides more support. Estimates of a bequest parameter indicate that elderly households value contributions to bequests as

highly as contributions to their own consumption. This is equally true for households with and without children. Such a bequest motive would curtail the impact of lifetime uncertainty on consumption growth. *The Review of Economics and Statistics*, February 1993, 75(1): 38-47. (Reprinted with permission of *The Review of Economics and Statistics*.)

## 18 ESTATE PLANNING AND DISTRIBUTIONS

***Borrowing Constraints and Two-Sided Altruism with an Application to Social Security***, by David Altig (Federal Reserve Bank of Cleveland) and Steven J. Davis (University of Chicago and National Bureau of Economic Research)

We develop the implications of borrowing constraints and two-sided altruism in an overlapping generations framework with agents who live three periods. Our analysis identifies six equilibrium patterns of intertemporal and intergenerational linkages in the no-loan economy, one of which corresponds to the traditional life-cycle model, and one of which corresponds to Barro's dynastic model. Novel linkage patterns involve parent-to-child transfers early in the life cycle, child-to-parent gifts late in the life cycle, or both. Capital accumulation behavior and the consequences of fiscal policy interventions depend, often critically, on which linkage pattern prevails. We show, for example, how unfunded social security interventions can significantly depress aggregate capital accumulation, even when every generation is linked to its successor generation by altruistic transfers. We also derive a non-Ricardian neutrality result for gift motive economies that holds whether or not borrowing constraints bind and whether or not parent and child are connected by an operative altruism motive at all points in the life cycle. *Journal of Economic Dynamics and Control*, May 1993, 17(3): 467-494. (Reprinted with permission of North-Holland Publishing Company.)

## 19 EMPLOYEE BENEFIT PROGRAMS

***The Scope, Nature, and Effects of Employee Stock Ownership Plans in Japan***, by D. C. Jones and T. Kato

Using data for various years, including new data for 1973-1984, the authors examine the scope, nature, determinants, and effects of Japanese employee stock ownership plans (ESOPs). In 1988, of firms listed on Japan's eight stock exchange markets, 91 percent had an ESOP, and the average (nonexecutive) employee plan participant owned stock worth about \$14,000. The authors find that firms were more likely to adopt ESOPs when recent business performance was below average, the capital/labor ratio was relatively low, and employment growth was relatively fast. ESOPs apparently enhanced enterprise productivity. *Industrial and Labor Relations Review*, January 1993, 46(2): 352-367. (Reprinted with permission of the *Journal of Economic Literature*.)

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## INSURER MANAGEMENT AND REGULATION

***Measuring Cost Efficiency in the Property-Liability Insurance Industry***, by J. David Cummins (University of Pennsylvania) and Mary A. Weiss (Temple University)

Escalating prices and periodic availability problems in property-liability insurance markets are often attributed to insurance company inefficiency and lax claims settlement practices. This paper investigates these issues by estimating stochastic cost frontiers for three size-stratified samples of property-liability insurers over the period 1980-1988. A translog cost function and input share equations are estimated using maximum likelihood techniques. The results show that large insurers operate in a narrow range around an average efficiency level of about 90 percent relative to their cost frontier. Efficiency levels for medium and small insurers are about 80 and 88 percent in relation to their respective frontiers. Wider variations in efficiency are present for these two groups in comparison with large insurers. Large insurers slightly over-produce loss settlement services, while small and medium-size insurers under-produce this output. The small and intermediate size groups are characterized by economies of scale, suggesting the potential for cost reductions from consolidations in the industry. *Journal of Banking and Finance*, April 1993, 17(2-3): 463-481. (Reprinted with permission of North-Holland Publishing Company.)

***The Measurement of Efficiency in Life Insurance: Estimates of a Mixed Normal-Gamma Error Model***, by Andrew M. Yuengert (Federal Reserve Bank of New York)

This paper makes three contributions to the literature on efficiency in financial services. First, it presents estimates of a mixed error cost frontier in which the variances of both the normal and gamma distributions can vary with firm size. Second, it extends the literature on life insurance scale and product mix economies by incorporating and measuring X-inefficiency. Estimates of X-inefficiency range from 35 to 50 percent; ray scale economies exist up to \$15 billion in assets. Third, comparisons of normal-gamma estimates with other methods—thick frontier, weighted least squares, half-normal distributions—demonstrate some of their pitfalls. *Journal of Banking and Finance*, April 1993, 17(2-3): 483-496. (Reprinted with permission of North-Holland Publishing Company.)

***X-Efficiency in the US Life Insurance Industry***, by Lisa A. Gardner (Old Dominion University) and Martin F. Grace (Georgia State University)

Using six years of data, 1985-1990, we estimate hybrid translog cost functions for 561 life insurers. We examine the resulting residuals to determine the relative efficiency of insurers in the sample. We then test the residuals to

see if they are related to so-called X-efficiencies because of internal and external monitoring, or to other factors related to rent-seeking. Results show a large degree of persistent inefficiency seems to exist among sample firms, the inefficiencies relate to some internal or external monitoring, and rent-seeking may be occurring. *Journal of Banking and Finance*, April 1993, 17(2-3): 497-510. (Reprinted with permission of North-Holland Publishing Company.)

## 21 INSURANCE RATING MODELS

***Robust Credibility***, by Alois Gisler and Peter Reinhard (Swiss Insurance Company, Winterthur)

Outlier observations caused by big claims or by an event producing a series of claims are a special problem in ratemaking and in tariff calculation. The authors believe that combining credibility and robust statistics is the right answer to this problem. The main idea is to robustify the individual claims experience by using a robust estimator  $T_i$  instead of the individual mean  $X_i$  and to look at the credibility estimator based on the robust statistics  $\{T_i; i=1,2,\dots\}$ . Choosing a particular influence function leads to data trimming with an observation-dependent trimming point. *Astin Bulletin*, May 1993, 23(1): 117-143. (Reprinted with permission of *Astin Bulletin*.)

## 22 SAFETY AND LOSS CONTROL

***Risk Perception of Common Consumer Products: Judgments of Accident Frequency and Precautionary Intent***, by Michael S. Wogalter (North Carolina State University), Douglas J. Brems (AT&T Bell Laboratories) and Elaine G. Martin (Virginia Department of Health)

This research examined people's accuracy in judging the risk of common consumer products. In two experiments, participants estimated the frequency of product-related injuries at a quick pace, slow pace, and following lengthy analysis of accident scenarios. Participants' estimates of injury were then compared to objective injury rates compiled by the U.S. Consumer Product Safety Commission. The results showed that participants were able to assess relative levels of risk quickly and accurately, but additional time and analysis had no effect on estimation accuracy. Perceived injury severity was strongly related to both participant's risk estimates and their precautionary intent ratings, but no relationship was found between precautionary intent and the objective risk data. The practical importance of precautionary intent over risk perception is discussed. Implications for product warnings and safety education programs are described. *Journal of Safety Research*, Summer 1993, 24(2): 97-106. (Reprinted with permission of the *Journal of Safety Research*.)

***The Impact of Drunk Driving Legislation in Louisiana***, by Michael W. Neustrom (University of Southwestern Louisiana) and William M. Norton (University of New Haven)

This study used a time-series analysis to measure the impact of tougher, deterrence-based drunk driving legislation in Louisiana. Evaluations of similar laws enacted by other states have reported mixed results. The Louisiana study reported herein found a statistically-significant reduction in nighttime fatal and injury accidents that lasted 36 months after the new law was implemented. This reduction, combined with a similar, yet smaller reduction in daytime fatal and injury accidents, supports the thesis that the new law deterred drinking and driving. *Journal of Safety Research*, Summer 1993, 24(2): 107-121. (Reprinted with permission of the *Journal of Safety Research*.)

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