

## ARTICLES ON DEATH PENALTY DETERRENCE

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Charles N. W. Keckler

Life v. Death: Who Should Capital Punishment Marginally Deter?

Journal of Law, Economics and Policy, vol. 2, no. 1, pp. 101-161 (2006)

Abstract: Econometric measures of the effect of capital punishment have increasingly provided evidence that it deters homicides. However, most researchers on both sides of the death penalty debate continue to rely on rather simple assumptions about criminal behavior. I attempt to provide a more nuanced and predictive rational choice model of the incentives and disincentives to kill, with the aim of assessing to what extent the statistical findings of deterrence are in line with theoretical expectations. In particular, I examine whether it is plausible to suppose there is a marginal increase in deterrence created by increasing the penalty from life imprisonment without parole to capital punishment. The marginal deterrence effect is shown to be a direct negative function of prison conditions as they are anticipated by the potential offender – the more tolerable someone perceives imprisonment to be, the less deterrent effect prison will have, and the greater the amount of marginal deterrence the threat of capital punishment will add. I then examine the empirical basis for believing there to be a subset of killers who are relatively unafraid of the prison environment, and who therefore may be deterred effectively only by the death penalty. Criminals, empirically, appear to fear a capital sentence, and are willing to sacrifice important procedural rights during plea bargaining to avoid this risk. This has the additional effect of increasing the mean expected term of years attached to a murder conviction, and may generate a secondary deterrent effect of capital punishment. At least for some offenders, the death penalty should induce greater caution in their use of lethal violence, and the deterrent effect seen statistically is possibly derived from the change in the behavior of these individuals. This identification of a particular group on whom the death penalty has the greatest marginal effect naturally suggests reforms in sentencing (and plea bargaining) which focus expensive capital prosecutions on those most insensitive to alternative criminal sanctions.

Paul R. Zimmerman

Estimates of the Deterrent Effect of Alternative Execution Methods in the United States: 1978-2000  
American Journal of Economics and Sociology, vol. 65, no. 4, p. 909 (Oct. 2006)

Abstract: Several recent econometric studies suggest that states' application of capital punishment deters the rate of murder [Brumm and Cloninger (1996), Cloninger and Marchesini (2001), Mocan and Gittings (2001), and Zimmerman (2002)]. Since the U.S. Supreme Court's moratorium on state executions was lifted in 1976, states with death penalty laws have executed individuals using one or more of five different methods of execution (electrocution, lethal injection, gas chamber asphyxiation, hanging, and/or firing squad). The perceived "brutality" of certain execution methods (such as electrocution and gas chamber asphyxiation) has also recently lead to lethal injection being imposed as the sole method of execution in several death penalty states.

Using a panel of state-level data over the years 1978-2000, this paper examines whether the method by which death penalty states conduct their executions affects the per-capita incidence of murder in a differential manner. Several measures of the subjective probability of being executed are developed taking into account the timing of individual executions as in Mocan and

Gittings (2001). The empirical estimates suggest that the deterrent effect of capital punishment is driven primarily by executions conducted by electrocution. None of the other four methods of execution are found to have a statistically significant impact on the per-capita incidence of murder. These results are robust with respect to the manner in which the subjective probabilities of being executed are defined, whether or not a state has a death penalty law on the books, the removal of state and year fixed effects, controls for state-specific time trends, simultaneous control of all execution methods, and controls for other forms of public deterrence. In addition, it is shown that the negative and statistically significant impact of electrocutions is not driven by the occurrence of a “botched” electrocution execution during the relevant time period.

Paresh Narayan & Russell Smyth

Dead Man Walking: An Empirical Reassessment of the Deterrent Effect of Capital Punishment Using the Bounds Testing Approach to Cointegration

Applied Economics, vol. 38, no. 17, pp. 1975-1989 (Sept. 20, 2006)

Abstract: This paper empirically estimates a murder supply equation for the United States from 1965 to 2001 within a cointegration and error correction framework. Our findings suggest that any support for the deterrence hypothesis is sensitive to the inclusion of variables for the effect of guns and other crimes. In the long-run we find that real income and the conditional probability of receiving the death sentence are the main factors explaining variations in the homicide rate. In the short run the aggravated assault rate and robbery rate are the most important determinants of the homicide rate.

Hashem Dezhbakhsh & Joanna M. Shepherd

The Deterrent Effect of Capital Punishment: Evidence from a “Judicial Experiment”

Economic Enquiry, vol. 44, no. 3, pp. 512-535 (July 2006)

Abstract: We use panel data for 50 states during the 1960–2000 period to examine the deterrent effect of capital punishment, using the moratorium as a “judicial experiment.” We compare murder rates immediately before and after changes in states’ death penalty laws, drawing on cross-state variations in the timing and duration of the moratorium. The regression analysis supplementing the before-and-after comparisons disentangles the effect of lifting the moratorium on murder from the effect of actual executions on murder. Results suggest that capital punishment has a deterrent effect, and that executions have a distinct effect which compounds the deterrent effect of merely (re)instating the death penalty. The finding is robust across 96 regression models.

Richard Berk

New Claims about Execution and General Deterrence: Deja Vu All over Again?

Journal of Empirical Legal Studies, vol. 2, issue 2, pp. 303-330 (July 2005)

Abstract: A number of papers have recently appeared claiming to show that in the United States executions deter serious crime. There are many statistical problems with the data analyses reported. This article addresses the problem of “influence,” which occurs when a very small and atypical fraction of the data dominate the statistical results. The number of executions by state and year is the key explanatory variable, and most states in most years execute no one. A very few states in particular years execute more than five individuals. Such values represent about 1 percent of the available observations. Reanalyses of the existing data are presented showing that claims of deterrence are a statistical artifact of this anomalous 1 percent.

Dale O. Cloninger & Roberto Marchesini

Execution Moratoriums, Commutations and Deterrence: the case of Illinois  
Applied Economics, vol. 38, no. 9, pp. 967-973 (May 20, 2006)

Abstract: In an earlier work the impact of an execution moratorium in Texas on the monthly returns (first differences) of homicides was investigated. That moratorium was judicially imposed pending the appeal of a death sentence that could have had widespread consequences. A similar methodology is applied to the state of Illinois. In January 2000, the Governor of Illinois declared a moratorium on executions pending a review of the judicial process that condemned certain murderers to the death penalty. In January 2003 just prior to leaving office, the Governor commuted the death sentences of all of those who then occupied death row. It is found that these actions are coincident with the increased risk of homicide incurred by the residents of Illinois over the 48 month post-event period for which data were available. The increased risk produced an estimated 150 additional homicides during the post-event period.

Robert Weisberg

The Death Penalty Meets Social Science: Deterrence and Jury Behavior Under New Scrutiny  
Annual Review of Law and Social Science, vol. 1, pp. 151-170 (December 2005)

Abstract: Social science has long played a role in examining the efficacy and fairness of the death penalty. Empirical studies of the deterrent effect of capital punishment were cited by the Supreme Court in its landmark cases in the 1970s; most notable was the 1975 Isaac Ehrlich study, which used multivariate regression analysis and purported to show a significant marginal deterrent effect over life imprisonment, but which was soon roundly criticized for methodological flaws. Decades later, new econometric studies have emerged, using panel data techniques, that report striking findings of marginal deterrence, even up to 18 lives saved per execution. Yet the cycle of debate continues, as these new studies face criticism for omitting key potential variables and for the potential distorting effect of one anomalously high-executing state (Texas). Meanwhile, other empiricists, relying mainly on survey questionnaires, have taken a fresh look at the human dynamics of death penalty trials, especially the attitudes and personal background factors that influence capital jurors.

Joanna M. Shepherd, Clemson University

Murders of Passion, Execution Delays, and the Deterrence of Capital Punishment  
Journal of Legal Studies, vol. 33, no. 2, pp. 283-322 (June 2004)

Abstract: I examine two important questions in the capital punishment literature: what kinds of murders are deterred and what effect the length of the death-row wait has on deterrence? To answer these questions, I analyze data unused in the capital punishment literature: monthly murder and execution data. Monthly data measure deterrence better than the annual data used in earlier capital punishment papers for two reasons: it is impossible to see monthly murder fluctuations in annual data and only monthly data allow a model in which criminals update their perceived execution risk frequently. Results from least squares and negative binomial estimations indicate that capital punishment does deter: each execution results in, on average, three fewer murders. In addition, capital punishment deters murders previously believed to be undeterrable: crimes of passion and murders by intimates. Moreover, murders of both black and white victims decrease after executions. This suggests that, even if the application of capital punishment is racist, the benefits of capital punishment are not. However, longer waits on death row before execution lessen the deterrence. Specifically, one less murder is committed for every 2.75-years reduction in death row waits. Thus, recent legislation to shorten the wait on death row should strengthen capital punishment's deterrent effect.

Paul R. Zimmerman

State Executions, Deterrence and the Incidence of Murder

Journal of Applied Economics, vol. 7, no. 1, pp. 163-193 (May 2004)

Abstract: This study employs a panel of U.S. state-level data over the years 1978-1997 to estimate the deterrent effect of capital punishment. Particular attention is paid to problems of endogeneity bias arising from the non-random assignment of death penalty laws across states and a simultaneous relationship between murders and the deterrence probabilities. The primary innovation of the analysis lies in the estimation of a simultaneous equations system whose identification is based upon the employment of instrumental variables motivated by the theory of public choice. The estimation results suggest that structural estimates of the deterrent effect of capital punishment are likely to be downward biased due to the influence of simultaneity. Correcting for simultaneity, the estimates imply that a state execution deters approximately fourteen murders per year on average. Finally, the results also suggest that the announcement effect of capital punishment, as opposed to the existence of a death penalty provision, is the mechanism actually driving the deterrent effect associated with state executions.

Zhiqiang Liu

Capital Punishment and the Deterrence Hypothesis: Some New Insights and Empirical Evidence

Eastern Economic Journal, vol. 30, iss. 2, p. 237 (Spring 2004)

Abstract: Economists have made repeated efforts through both theoretical modeling and empirical testing to understand the deterrent effect of capital punishment. By and large, they have found a negative and statistically significant effect of capital punishment on the act of murder (that is, the death penalty deters murder). Ehrlich [1975] provides the first systematic analysis of the relationship between capital punishment and murder along with the first empirical test of the deterrence hypothesis concerning not only capital punishment but also other deterrent measures. His results suggest that on the average eight murder victims might have been saved as a result of one execution for the sample period 1933-67 in the United States. Although Ehrlich's work was criticized by scholars such as Waldo [1981] and Forst [1983], many subsequent studies, using independent time-series and cross-section data from the United States [Ehrlich, 1977; Layson, 1985; Cloninger, 1992; Ehrlich and Liu, 1999; Dezhbakhsh, et al. 2000], Canada [Layson, 1983] and the UK [Wolpin, 1978], have offered corroborating evidence consistent with the deterrence hypothesis.

H. Naci Mocan & R. Kaj Gittings

Getting Off Death Row: Commuted Sentences and the Deterrent Effect of Capital Punishment

Journal of Law and Economics, vol. 46, no. 2, pp. 453-478 (October 2003)

Abstract: This paper merges a state-level panel data set that includes crime and deterrence measures and state characteristics with information on all death sentences handed out in the United States between 1977 and 1997. Because the exact month and year of each execution and removal from death row can be identified, they are matched with state-level criminal activity in the relevant time frame. Controlling for a variety of state characteristics, the paper investigates the impact of the execution rate, commutation and removal rates, homicide arrest rate, sentencing rate, imprisonment rate, and prison death rate on the rate of homicide. The results show that each additional execution decreases homicides by about five, and each additional commutation increases homicides by the same amount, while an additional removal from death row generates one additional murder. Executions, commutations, and removals have no impact on robberies, burglaries, assaults, or motor-vehicle thefts.

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Does Capital Punishment Have a Deterrent Effect? New Evidence from Postmoratorium Panel Data  
*American Law & Economics Review*, vol. 5, no. 2, pp. 344-376 (Fall 2003)

Abstract: Evidence on the deterrent effect of capital punishment is important for many states that are currently reconsidering their position on the issue. We examine the deterrent hypothesis using county-level, post-moratorium panel data and a system of simultaneous equations. The procedure we employ overcomes common aggregation problems, eliminates the bias arising from unobserved heterogeneity, and provides evidence relevant for current conditions. Our results suggest that capital punishment has a strong deterrent effect; each execution results, on average, in 18 fewer murders—with a margin of error of plus or minus 10. Tests show that results are not driven by tougher sentencing laws, and are also robust to many alternative specifications.

Lawrence Katz, Steven D. Levitt & Ellen Shustorovich  
Prison Conditions, Capital Punishment, and Deterrence

*American Law and Economics Review*, vol. 5, issue 2, pages 318-343 (Fall 2003)

Abstract: Previous research has attempted to identify a deterrent effect of capital punishment. We argue that the quality of life in prison is likely to have a greater impact on criminal behavior than the death penalty. Using state-level panel data covering the period 1950--90, we demonstrate that the death rate among prisoners (the best available proxy for prison conditions) is negatively correlated with crime rates, consistent with deterrence. This finding is shown to be quite robust. In contrast, there is little systematic evidence that the execution rate influences crime rates in this time period.

James A. Yunker, Western Illinois University

A New Statistical Analysis of Capital Punishment Incorporating U.S. Postmoratorium Data  
*Social Science Quarterly*, vol. 82, no. 2, pp. 297-311 (2002)

Objective: This article reports on a basic regression analysis of the deterrence hypothesis incorporating U.S. data that has accumulated since the resumption of capital punishment in 1977. Methods. The cross-sectional approach employs data on state homicide rates and estimated execution rates between 1976 and 1997 across 50 states and the District of Columbia. The time series approach employs annual data on the U.S. national homicide rate and estimated national execution rate between 1930 and 1997. Results. Using state data, statistically weak support is found for the deterrence hypothesis. Using national time series data, considerably stronger statistical support is found for the deterrence hypothesis. It is also shown that the same time series regression using data from 1930 to 1976 does not support the deterrence hypothesis, thus showing the probative value of the more recent data. Conclusions. Statistical data from the postmoratorium period are likely to be useful in evaluating the deterrence hypothesis, and therefore social scientists should be carefully examining this evidence.

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Execution and Deterrence: A Quasicontrolled Group Experiment  
*Applied Economics*, vol. 33, no. 5, pp. 569-576 (2001)

Abstract: Using portfolio analysis in a type of controlled group experiment, this study develops an empirical model of homicide changes in Texas over a period of a "normal" number of

executions. The empirically derived model then estimates the changes in the number of homicides in Texas (1) over a period of near zero executions and; (2) over an immediate subsequent period of double the “normal” number of executions. The actual changes in Texas homicides over the first period is less than estimated by the model and greater (or no different) than estimated by the model in the second period. Because changes in the number of homicides in Texas and throughout the United States were negative over both periods, these empirical results are consistent with the deterrence hypothesis. That is, there were a greater than predicted number of homicides in the first period and fewer than predicted number in the second period.

Jon Sorensen, Robert Wrinkle, Victoria Brewer, & James Marquart  
Capital punishment and deterrence: Examining the effect of executions on murder in Texas *Crime and Delinquency*, vol. 45, no.4, pp. 481-493 (Oct. 1999)

Abstract: This study tested the deterrence hypothesis in Texas, the most active execution jurisdiction during the modern era.

Isaac Ehrlich and Zhiqiang Liu  
Sensitivity Analysis of the Deterrence Hypothesis: Lets Keep the Econ in Econometrics  
*Journal of Law and Economics*, vol. 42, no. 1, pp. 455-487 (April 1999)

Abstract: Leamer and McManus applied Extreme Bound Analysis (EBA) in an empirical study of the deterrent effects of capital punishment and other penalties. Their analysis has questioned the validity of the deterrence hypothesis. The thrust of our paper is twofold: first, by applying EBA to well-known econometric models of demand, production, and human-capital investment, our analysis exposes and illustrates the inherent flaws of EBA as a method of deriving valid inferences about model specification. Second, since the analysis shows Leamer and McManus’s inferences about deterrence to be based on a flawed methodology, we offer an alternative, theory-based sensitivity analysis of estimated deterrent effects using similar data. Our analysis supports the deterrence hypothesis. More generally, it emphasizes the indispensable role of theory in guiding sensitivity analyses of model specification.

Harold J. Brumm and Dale O. Cloninger  
Perceived Risk of Punishment and the Commission of Homicides: A Covariance Structure Analysis  
*Journal of Economic Behavior and Organization*, vol. 31, no. 1, pp. 1-11 (Sept. 1996)

Abstract: If the behavior of potential murderers does in fact respond to the risk of punishment, it is the perceived risk rather than the ex post risk as measured by arrest rates, conviction rates, or execution rates. Previous empirical studies of homicide behavior have, by and large, ignored this distinction. The present paper accommodates this distinction by estimating a covariance structure model in which the perceived risk is treated as an endogenous latent variable, with two measures of sanctions as its indicators. Cross-section data are used for the estimation. One of the principal findings is that the homicide commission rate is significantly and negatively correlated with the perceived risk of punishment, which provides empirical support for the deterrence hypothesis (Ehrlich, 1975). The other principal findings are that the perceived risk of punishment is (a) significantly and negatively correlated with the homicide commission rate, and (b) significantly and positively correlated with police presence. The latter results provide empirical support for the resource saturation hypothesis (Fisher and Nagin, 1978).