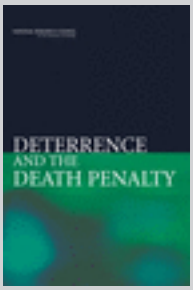

Deterrence and the Death Penalty

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Daniel S. Nagin and John V. Pepper, editors; Committee on Deterrence and the Death Penalty; Committee on Law and Justice; Division on Behavioral and Social Sciences and Education; National Research Council

Summary

In 1976, the Supreme Court decision in *Gregg v. Georgia* (428 U.S. 153) ended the 4-year moratorium on executions that had resulted from its 1972 decision in *Furman v. Georgia* (408 U.S. 238). In the immediate aftermath of *Gregg*, an earlier report of the National Research Council (NRC) reviewed the evidence relating to the deterrent effect of the death penalty that had been gathered through the mid-1970s. That review was highly critical of the earlier research and concluded (National Research Council, 1978, p. 9) that "available studies provide no useful evidence on the deterrent effect of capital punishment."

During the 35 years since *Gregg*, and particularly in the past decade, many additional studies have renewed the attempt to estimate the effect of capital punishment on homicide rates. Most researchers have used post-*Gregg* data from the United States to examine the statistical association between homicide rates and the legal status, the actual implementation of the death penalty, or both. The studies have reached widely varying, even contradictory, conclusions. Some studies conclude that executions save large numbers of lives; others conclude that executions actually increase homicides; and still others conclude that executions have no effect on homicide rate. Commentary on the scientific validity of the findings has sometimes been acrimonious. The Committee on Deterrence and the Death Penalty was convened against this backdrop of conflicting claims about the effect of capital punishment on homicide rates. The committee addressed three main questions laid out in its charge:

1. Does the available evidence provide a reasonable basis for drawing conclusions about the magnitude of capital punishment's effect on homicide rates?
2. Are there differences among the extant analyses that provide a basis for resolving the differences in findings? Are the differences in findings due to inherent limitations in the data? Are there existing statistical methods and/or theoretical perspectives that have yet to be applied that can better address the deterrence question? Are the limitations of existing evidence reflective of a lack of information about the social, economic, and political underpinnings of homicide rates and/or the administration of capital punishment that first must be resolved before the deterrent effect of capital punishment can be determined?
3. Do potential remedies to shortcomings in the evidence on the deterrent effect of capital punishment have broader applicability for research on the deterrent effect of noncapital sanctions?

CONCLUSION AND RECOMMENDATION: The committee concludes that research to date on the effect of capital punishment on homicide is not informative about whether capital punishment decreases, increases, or has no effect on homicide rates. Therefore, the committee recommends that these studies not be used to inform deliberations requiring judgments about the effect of the death penalty on homicide. Consequently, claims that research demonstrates that capital punishment decreases or increases the homicide rate by a specified amount or has no effect on the homicide rate should not influence policy judgments about capital punishment.

The committee was disappointed to reach the conclusion that research conducted in the 30 years since the earlier NRC report has not sufficiently advanced knowledge to allow a conclusion, however qualified, about the effect of the death penalty on homicide rates. Yet this is our conclusion. Some studies play the useful role, either intentionally or not, of demonstrating the fragility of claims to have or not to have found deterrent effects. However, even these studies suffer from two intrinsic shortcomings that severely limit what can be learned from them about the effect of the death penalty—as it has actually been administered in the United States in the past 35 years—on the death penalty.

Properly understood, the relevant question about the deterrent effect of capital punishment is the differential or marginal deterrent effect of execution over the deterrent effect of other available or commonly used penalties, specifically, a lengthy prison sentence or one of life without the possibility of

parole. One major deficiency in all the existing studies is that none specify the noncapital sanction components of the sanction regime for the punishment of homicide. Another major deficiency is the use of incomplete or implausible models of potential murderers' perceptions of and response to the capital punishment component of a sanction regime. Without this basic information, it is impossible to draw credible findings about the effect of the death penalty on homicide.

Commentary on research findings often pits studies claiming to find statistically significant deterrent effects against those finding no statistically significant effects, with the latter studies sometimes interpreted as implying that there is no deterrent effect. A fundamental point of logic about hypothesis testing is that failure to reject a null hypothesis does not imply that the null hypothesis is correct.

Our mandate was not to assess whether competing hypotheses about the existence of marginal deterrence from capital punishment are plausible, but simply to assess whether the empirical studies that we have reviewed provide scientifically valid evidence. In its deliberations and in this report, the committee has made a concerted effort not to approach this question with a prior assumption about deterrence. Having reviewed the research that purports to provide useful evidence for or against the hypothesis that the death penalty affects homicide rates, we conclude that it does not provide such evidence.

A lack of evidence is not evidence for or against the hypothesis. Hence, the committee does not construe its conclusion that the existing studies are uninformative as favoring one side or the other side in the long-standing debate about deterrence and the death penalty. The committee also emphasizes that deterrence is but one of many considerations relevant to rendering a judgment on whether the death penalty is good public policy.

Even though the scholarly evidence on the deterrent effect of capital punishment is too weak to guide decisions, this does not mean that people should have no views on capital punishment. Judgment about whether there is a deterrent effect is still relevant to policy, but that judgment should not be justified based on evidence from existing research on capital punishment's effect on homicide. Just as important, the committee did not investigate the moral arguments for or against capital punishment or the empirical evidence on whether capital punishment is administered in a nondiscriminatory and consistent fashion. Nor did it investigate whether the risk of mistaken execution is acceptably small or how the cost of administering the death penalty compares to other sanction alternatives. All of these issues are relevant to making a judgment about whether the death penalty is good public policy.

Our charge was also limited to assessing the evidence on the deterrent effect of the death penalty on murder, not the deterrent effect of noncapital

sanctions on crime more generally. Our negative conclusion on the informativeness of the evidence on the former issue should not be construed as extending to the latter issue because the committee did not review the very large body of evidence on the deterrent effect of noncapital sanctions.

SHORTCOMINGS IN EXISTING RESEARCH

The post-*Gregg* studies are usefully divided into two categories based on the type of data analyzed. One category, which we call *panel data studies,* analyzes sets of states or counties measured over time, usually from about 1970 to 2000. These studies relate homicide rates to variations over time and across states or counties in the legal status of capital punishment and/or the frequency of executions. The second category, which we call *time-series studies*, generally studies only a single geographic unit. The geographic unit may be as large as a nation or as small as a city. These studies usually examine whether there are short-term changes in homicide rates in that geographic unit in the aftermath of an execution.

As noted above, research on the effect of capital punishment on homicide suffers from two fundamental flaws that make them uninformative about the effect of capital punishment on homicide rates: they do not specify the noncapital sanction components of the sanction regime for the punishment of homicide, and they use incomplete or implausible models of potential murderers' perceptions of and response to the capital punishment component of a sanction regime. In addition, the existing studies use strong and unverifiable assumptions to identify the effects of capital punishment on homicides.

Specification of the Sanction Regime for Homicide

The sanction regime for homicide comprises both the capital and noncapital sanctioning options that are available for its punishment and the policies governing the administration of these options. The relevant question regarding the deterrent effect of capital punishment is the differential deterrent effect of execution in comparison with the deterrent effect of other available or commonly used penalties. We emphasize "differential" because it is important to recognize that even in states that make the most intense use of capital punishment, most convicted murderers are not sentenced to death but to a lengthy prison sentence—often life without the possibility of parole.

None of the studies that we reviewed (both those using a panel approach and those using time-series approaches) accounted for the severity of noncapital sanctions in their analyses. As discussed in Chapters 4 and 6, there are sound reasons to expect that the severity of the noncapital sanc-

tions for homicide varies systematically with the availability of capital punishment, the intensity of use of capital punishment, or both. For example, the political culture of a state may affect the frequency of the use of capital punishment and also the severity of noncapital sanctions for homicide. Thus, any effect that these noncapital sanctions have on the homicide rate may contaminate any estimated effect of capital punishment.

Potential Murderers' Perceptions of and Responses to Capital Punishment

A by-product of the absence of consideration of the noncapital component of the sanction regime is that no studies consider how the capital and noncapital components of a regime combine in affecting the behavior of potential murderers. Only the capital component of the sanction regime has been studied, and this in itself shows both a serious conceptual flaw and a serious data flaw in the entire body of research.

Several factors make the attempts by the panel studies to specify the capital component of state sanctions regimes uninterpretable. First, the findings are very sensitive to the way the risk of execution is specified. Second, there is no logical basis for resolving disagreements about how this risk should be measured.

Much of the panel research simply assumes that potential murderers respond to the objective risk of execution. There are significant complexities in computing this risk even for a well-informed researcher, let alone for a potential murderer. Among these complexities are that only 15 percent of people who have been sentenced to death since 1976 have actually been executed and a large fraction of death sentences are subsequently reversed. None of the measures that are used in the research have been shown to be a better measure of the risk of execution than any others. Thus, even if one assumes that a potential murderer's perceived risk corresponds to the actual risk, there is no basis for arbitrating the competing claims about what is the "right" risk measure.

The committee is also skeptical that potential murderers can possibly estimate the objective risk, whatever it is. Hence, there is good reason to believe that perceived risk deviates from the objective risk. The research does not address how potential murderers' perceptions of capital punishment—and, more generally, noncapital sanction risks—are formed.

The time-series studies come in many forms—studies of a single execution event, studies of many events, and studies with a cross-polity dimension—but a common feature of the studies is that none of them attempts to specify even the capital component of the overall sanction regime. This is a crucial shortcoming and is exemplified in the time-series analyses that examine the association between deviations of number of executions from a fitted trend line and deviations of homicides from a fitted trend line.

For potential murderers to possibly be responsive to deviations from the execution trend line, they have to be attentive to it. The studies are silent on two key questions: (1) Why are potential murderers attentive to the trend line in the number of executions? (2) Why do they respond to deviations from the trend line?

If time-series analyses find that homicide rates are not responsive to such deviations, it may be that potential murderers are responding to the trend line in executions but not to deviations from it. For example, a rising trend in the number of executions might be perceived as signaling a toughening of the sanction regime, which might deter potential murderers. Alternatively, if a time-series analysis finds that homicide rates are responsive to such deviations, the question is why? One possibility is that potential murderers interpret the deviations as new information about the intensity of the application of capital punishment—that is, they perceive a change in the part of the sanction regime relating to application of capital punishment. If so, a deviation from the execution trend line may cause potential murderers to alter their perceptions of the future course of the trend line, which in turn may change their behavior.

Yet, even accepting this idea, a basic question persists. Why should the trend lines fit by researchers coincide with the perceptions of potential murderers about trends in executions? Because there are no studies that include empirical analyses on the question of how potential murderers perceive the risk of sanctions, there is no basis for assuming that the trend line specified by researchers corresponds to the trend line (if any) that is perceived by potential murderers. If researchers and potential murderers do not perceive trends the same way, then time-series analyses do not correctly identify what potential murderers perceive as deviations. Because of this basic flaw in the research, the committee has no basis for assessing whether the findings of time-series studies reflect a real effect of executions on homicides or are artifacts of models that incorrectly specify how deviations from a trend line cause potential murderers to update their forecasts of the future course of executions.

Strong and Unverifiable Assumptions

To obtain a single estimate that specifies the effect of capital punishment on homicide, researchers invariably rely on a range of strong and unverified assumptions. In part (as discussed above), this reflects the lack of basic information on the relevant sanction regimes for homicide and the associated perceptions of risk. None of the studies accounts for the noncapital component of the sanction regime, and potential murderers' risk perceptions are assumed to depend on observable frequencies of arrest, conviction, and execution. The ad hoc choices of alternative models of risk perceptions

lead to very different inferences on the effects of capital punishment, and none of them is inherently any more justifiable than any other.

Additional data and research on sanction regimes and risk perceptions may serve to reduce this form of model uncertainty. However, even if these uncertainties are fully reconciled, a more fundamental problem is that the outcomes of counterfactual sanction policies are unobservable. That is, there is no way to determine what would have occurred if a given state had a different sanction regime. In light of this observational problem, the available data cannot reveal the effect of capital punishment itself since the policy-relevant question is whether capital punishment deters homicides relative to other sanction regimes. That is, the data alone cannot reveal what the homicide rate in a state without (with) a capital punishment regime would have been had the state (not) had such a regime.

The standard procedure in capital punishment research has been to impose sufficiently strong assumptions to yield definitive findings on deterrence. For example, a common assumption is that sanctions are random across states or years, as they would be if sanctions had been randomly assigned in an experiment. Another common assumption is that the response of criminality to sanctions is homogeneous across states and years. Some studies use instrumental variables to identify deterrent effects, but this requires yet other assumptions. The use of strong assumptions hides the problem that the study of deterrence is plagued by model uncertainty and that many of the assumptions used in the research lack credibility.

NEXT STEPS FOR RESEARCH

The earlier NRC committee concluded that it was "skeptical that the death penalty [as practiced in the United States] can ever be subjected to the kind of statistical analysis that would validly establish the presence or absence of a deterrent effect" (National Research Council, 1978, p. 62). The present committee is not so pessimistic and offers several recommendations for addressing the shortcomings in research to date on capital punishment. They include

1. collection of the data required for a more complete specification of both the capital and noncapital components of the sanction regime for murder;
2. research on how potential murderers perceive the sanction regime for murder; and
3. use of methods that makes less strong and more credible assumptions to identify or bound the effect of capital punishment on homicides.

In addition, the committee suggests research on how the presence of capital punishment in a sanctions regime affects the administration of the regime and how the homicide rate affects the statutory definition of the sanction regime and its administration.

The committee does not expect that advances in new data on sanction regimes and obtaining knowledge of sanctions risk perceptions will come quickly or easily. However, data collection on the noncapital component of the sanction regime need not be entirely complete to be useful. Moreover, even if research on perceptions of the risk of capital punishment cannot resolve all major issues, some progress would be an important step forward.

The ultimate success of the research may depend on the specific question that is addressed. Questions of interest include

- if or how the legal status of the death penalty affects homicide rates,
- if or how the intensity of use of the death penalty affects homicide rates, and
- if or how executions affect homicide rates in the short run.

Some but not all of these questions may be informed by successful application of the committee's suggested lines of research.

Although evaluation of research on the deterrent effect of noncapital sanctions was not part of the committee's charge, we note that the methods and approaches used to study capital and noncapital sanction effects on crime overlap. We were charged with making suggestions for advancing research on the latter issue. Thus, the research and data collection suggestions above are framed in the broader context of research on the effect on crime rates of both capital and noncapital sanctions.

We think this aspect of our charge is particularly important. Although capital punishment is a highly contentious public policy issue, policies on prison sanctions and their enforcement are the most important components of the nation's response to crime. Thus, even if the research agenda we outline is not ultimately successful in illuminating some aspects of the effect of capital punishment on homicide, advancing knowledge on the crime prevention effects of noncapital sanctions and their enforcement can make major contributions to important policy issues.

DETERRENCE AND THE DEATH PENALTY

Committee on Deterrence and the Death Penalty

Daniel S. Nagin and John V. Pepper, *Editors*

Committee on Law and Justice

Division of Behavioral and Social Sciences and Education

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IN MEMORIAM

James Q. Wilson
1931-2012

"I've tried to follow the facts wherever they land."

This report is dedicated to James Q. Wilson for his long service to the National Research Council, his influential career of scholarship and public service, and his unblinking commitment to the principle that science requires us to interpret the evidence as it is, not as we want it to be.

Preface

More than three decades ago, in *Deterrence and Incapacitation: Estimating the Effects of Criminal Sanctions on Crime Rates*, the National Research Council ([NRC] 1978, p. 9) concluded that "available studies provide no useful evidence on the deterrent effect of capital punishment." That report was issued 2 years after the Supreme Court decision in *Gregg v. Georgia* ended a 4-year moratorium on execution in the United States. In the 35 years since the publication of that report, especially in recent years, a considerable number of post-*Gregg* studies have attempted to estimate the effect of the legal status or the actual implementation of the death penalty on homicide rates. Those studies have reached widely varying conclusions.

Against this background, the NRC formed the Committee on Deterrence and the Death Penalty to address whether the available evidence provides a reasonable basis for drawing conclusions about the magnitude of the effect of capital punishment on homicide rates. At a workshop on April 28-29, 2011, workshop papers commissioned by the committee (which will be published in a special issue of the *Journal of Quantitative Criminology*) were presented and discussed by their authors: Robert J. Apel, University at Albany, State University of New York; Aaron Chalfin, University of California, Berkeley; Chao Fu, University of Wisconsin–Madison; Justin McCrary, University of California, Berkeley; Salvador Navarro, University of Western Ontario, Ontario, Canada; John V. Pepper, University of Virginia; and Steven Raphael, University of California, Berkeley. The workshop also included comments on the presentations by Jeffrey Grogger, University of Chicago; Guido Imbens, Harvard University; Kenneth C. Land, Duke

University; Christopher Sims, Princeton University; and Justin Wolfers, University of Pennsylvania.

The committee appreciates the contributions of these presenters and those who commented on them to the development of its report. In addition, John V. Pepper provided invaluable assistance to the committee throughout its deliberations. The work of staff members from the Committee on Law and Justice of the NRC facilitated the committee's work in many ways. Thanks are due to Jane L. Ross, study director; Keiko Ono, senior program associate; Carol Hayes, Christine Mirzayan fellow; and Barbara Boyd, administrative coordinator.

Many individuals at the NRC assisted the committee. We thank Kirsten Sampson-Snyder, who shepherded the report through the NRC review process, Eugenia Grohman, who edited the draft report, and Yvonne Wise, for processing the report through final production.

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We thank the following individuals for their review of this report: John Donohue, III, Stanford Law School, Stanford University; Andrew Gelman, Department of Statistics and Department of Political Science, Columbia University; Kenneth C. Land, Department of Sociology, Duke University; Candice Odgers, School of Social Ecology, University of California, Irvine; Ricardo Reis, Department of Economics, Columbia University; Greg Ridgeway, RAND Safety and Justice Program, RAND Center on Quality Policing, RAND Corporation; Robert J. Sampson, Department of Sociology, Harvard University; Dick Thornburgh, Counsel, K&L Gates, LLP, and former Attorney General of the United States; Petra E. Todd, Department of Economics, University of Pennsylvania; and Michael Tonry, School of Law, University of Minnesota, Minneapolis.

Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations nor did they see the final draft of the report before its release. The review of this report was overseen by Gary LaFree, National Consortium for the Study of Terrorism and Responses to Terrorism, University of Maryland, and John T. Monahan, University of Virginia Law School. Appointed by the NRC, they were responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully con-

sidered. Responsibility for the final content of this report rests entirely with the authoring committee and the institution.

This report is dedicated to James Q. Wilson. Jim was a valued member of this and many other NRC committees on which he served over his long and influential career. Jim's contributions to scholarship and public service will stand as enduring testimony to the power of his intellect. He was a quiet but forceful proponent for balanced and clear-minded assessment of the evidence. I first met Jim in my role as a staff member of the 1978 NRC committee that resulted in report *Deterrence and Incapacitation: Estimating the Effect of Criminal Sanctions on Crime Rates*. I was deeply impressed by the clarity of his thought and gift for communication. He served as a role model for me ever since. I was thus especially honored that he agreed to serve on this committee, which was greatly aided by his constructive participation throughout our deliberations.

Daniel S. Nagin, *Chair*
Committee on Deterrence and the Death Penalty

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