I. Overview

Criminal justice involves many trade-offs. Are we spending enough on police? What are the levels of penalties for different crimes? Are there trade-offs between different types of penalties? For example, does greater reliance on criminal penalties reduce the reliance on reputational penalties?

One complicated example is the death penalty. There is still some debate over the deterrence effect of the death penalty. But even if one accepts that such deterrence exists, how large does that effect have to be to outweigh the costs? The legal process for the death penalty is costly. What are the costs of accidentally convicting innocent individuals? The death penalty might save imprisonment costs after a certain point, but executions are so delayed that the present value of those costs might be small. Numbers cannot easily be assigned to all these costs and benefits, but it is still possible to give examples of how large different values have to be for people to change their decisions on whether the death penalty passes a cost-benefit type test.

Prison provides another interesting trade-off. Crime is overwhelmingly committed by young men. The incapacitation effect of prison is thus likely to decline with the prisoner’s age. If criminals have a high discount rate (and there is considerable evidence that is true),\(^1\) after a certain point lengthening prison sentences might not have much of an impact on deterring criminals. If society uses a different discount rate for the cost of imprisonment than criminals do for the penalty that they face, long prison terms might

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impose very little penalty on criminals despite imposing a very large financial burden on society.

There are many possible alternative methods of deterring crime. Longer prison terms are just one option. There are also issues of increasing the probability of arrest or conviction for those who are arrested. There are also private actions that can deter crime. Private reputations are one example. Take also putting locks on doors, car alarms, or people owning guns. Some of these actions involve possible externalities and we will discuss how those externalities might be measured and evaluated.

Though the range of possible estimates for many of these actions will be too large to definitively say whether the actions pass a cost-benefits test, that is not an unusual result. It is still useful to know what actions can be said to pay for themselves and which ones don’t.

Cost benefit analysis is a technique designed to determine the feasibility of a project or plan by quantifying its costs and benefits. Below is a brief rough outline of what is involved with measuring and calculating these costs and benefits.

II. Four types of Penalties

A. Prison, Fines, Reputations, and Collateral Penalties

There are generally four types of criminal penalties, all of which have significant costs and benefits: prison, fines, reputations, and so-called collateral penalties, the loss of the ability to hold different jobs or various rights. All these punishments deter crime, though with the exception of prison and fines there is no evidence of their different abilities to deter crime. The costs of these penalties vary dramatically. The two most
costly are prison and collateral penalties. For prison, there is the obvious cost of running
the prison, but there is another cost: anything beneficial that the criminal could have been
produced outside of prison. Many criminals might have continued spending most of their
time committing crime, but others would have produced benefits that people pay for.
Michael Milken might have been charged with stock parking crimes, a violation that
would normally have been punished with a $10,000 fine, but presumably there was some
reason why companies were willing to pay Milken $500 million per year to help them get
financing. During the mid-1980s the average person convicted of insider trading was
making $365,000 per year in legal income prior to conviction.

Just as women’s human capital depreciates when they leave the labor force to have
children, putting people in prison also leads to depreciated human capital. It is possible
their human capital that facilitates their ability to commit crime increases, but there is a
clear drop in earnings that occurs the longer the criminals are in prison.

In 2001, annual prison operating costs averaged $22,600 per inmate, ranging from
$8,128 in Arkansas to $44,379 in Maine.\(^2\) Much of this range depends on factors beyond
the control of correctional officials: differences in the cost of living, the mix of high and
low security prisoners, variation in prevailing wage rates, climate, building codes, as well
as other factors.\(^3\) For example, prisoners who are serving life sentences are very difficult
to maintain. The only additional penalty that could restrain the behavior of these
criminals is the threat of a death penalty. But there is no reduced prison time for good
behavior.

\(^3\) Ibid, p. 5.
Fines don’t have many of the costs involving prison. Paying the fine doesn’t interfere with criminal’s ability to continue working. There can be costs to collecting the fine, but those are similar to the costs of trying to put the criminal in prison. The question is whether it is easier to hide assets or the individual. However, while fines have many desirable attributes, they are not simply applicable for most criminals since the harmed caused by the criminal vastly outweighs the most criminals’ assets.
Collateral penalties share aspects of both prison and fines. For collateral penalties, the loss of business and professional licenses, the inability to work for many unions or to work for the government, as well as the loss of the ability to own a gun all have their own costs. A criminal conviction because of debarment is likely to result in lawyers loosing their licenses, executives in defense sellers being forbidden from working in the defense industry, and stockbrokers being banned from working in the securities industry.4 The penalties involving jobs are similar to those faced by people in prison. Even banning convicted felons being able to own guns can have its costs. The question is whether the felons will be more likely to use their guns for self-protection (many felons will presumably live in high crime areas) or whether they use the guns to commit yet more crimes. Presumably these risks vary by the type of crime the criminal was convicted of. White-collar criminals seem unlikely to be the people who are at risk of using a gun in a crime.

The debate over these collateral penalties goes back decades and the types of penalties are indeed very broad. Ex-convicts face many other forms of penalties such as being prevented from inheriting property, suffering partial or complete divestment of their assets, loosing life and automobile insurance, and losing pension funds and face the discontinuance of pension payments even if the individual is already retired.5 Since the loss of inheritance and pension funds and divestment of assets undoubtedly impose a larger absolute penalty on the well-to-do than it will on the poor, the estimates presented

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4 The National Advisory Commission on Criminal Justice Standards and Goals (1973, p. 592) notes that, "every State and the Federal government make it difficult for persons convicted of a felony to obtain licenses to practice occupations regulated by the government. In many instances conviction of a felony is automatic grounds for denial of a license. In others, it is in practice impossible for a former offender to obtain a license."
5 Grant et al., 1970, p. 1109-1143.
here will underestimate how much penalties increase as a function of pre-sentence income. Conviction also affects voting, parental rights, divorce, public employment, ability to serve as a juror, and holding public office. Several Presidential Task Forces have emphasized the importance of these collateral penalties and expressed concern over how ignoring collateral penalties will create inequities in criminal penalties (e.g., President's Commission, 1967, p. 88).

Many of these collateral penalties, such as the loss of property or other assets, are the same as fines. Losing assets in a divorce is no different than losing assets in the form of a fine. The only differences is that these collateral penalties transfer assets to a spouse or someone else instead of as restitution to the crime victim or as a fine to the government.

Finally reputational penalties have similarities to all the other penalties. As with prison and collateral penalties, reputational penalties can mean that employment is ended. Those who commit a crime may find that people are unwilling to hire the criminal because they no longer trust him. While the government imposes collateral penalties, reputations involve voluntary exchange. But there is another difference between prison and collateral penalties versus reputational penalties. As noted earlier, a cost of prison and collateral penalties could involve the loss of productive labor. Reputational penalties seem less likely to have the same problem since reputational penalties are only imposed voluntarily. Jobs where reputations are important in ensuring the worker’s behavior will be foreclosed to those workers. Jobs where reputations aren’t important won’t be foreclosed.

Reputations also have another similarity to fines and collateral penalties in that they apply most to the highest income criminals. People who lose professional licenses tend
to be relatively well to do. Reputations, where individuals are paid a premium, almost by
definition mean that the criminal is earning a higher income.

B. Comparing the penalties in real life

A criminal’s income plays a major role in how he is penalized. Penalties thus end
up being extremely progressive. If optimal penalties mean that two criminals who
commit the exact same crime should face the same penalty, this penalty structure
could mean that prison penalties are right for low-income criminals are too high for
high-income criminals. Similarly, penalties that are right for high-income criminals
would be too low for low-income criminals. If the later case is closer to the truth, it
implies that we are able to get closer to the right penalty simply because fines and
reputations, which are readily available for high-income criminals, are lower cost
ways of imposing penalties.

Take the case of a bank embezzler from California in the mid-1980s shown in the
accompanying table. The total criminal monetary penalty that a person bears from
conviction consists of the reduction in legitimate income, the lost income while in
prison, fines, legal costs, and the lost time resulting from the legal process leading up
to conviction. Assuming the exact same crime in terms of the amount taken and the
circumstances under which it was committed, an embezzler with an income one
standard deviation above the mean faces a total monetary penalty that is 4.94 times
greater than that for an average income embezzler. The analogous bank larcenist faces

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a 2.1 to 1 ratio over the one with the mean income. Therefore, if the low- and high-income criminals in both cases are to face the same expected penalties from conviction, the high-income embezzler must face a probability of conviction that is only 20.7 percent of that of the mean income embezzler and the high income larcenist a probability that is only 47 percent of that of mean income larcenist. When the corresponding values for two standard deviations above the mean are used, the relative probability of convictions fall to only 11 and 30 percent.

These numbers can underestimate the true differences across criminals. For example, if the real reduction in earnings persisted for five years beyond the last year of probation or parole and the real interest rate was two percent, the present value of lost earnings for an average bank embezzler is $31,020 and for embezzlers with income one and two standard deviations above the mean the present values are $190,818 and $364,028.
C. Understanding the Trade-off between Government Imposed Penalties and Reputational Penalties.

Government imposed penalties are not simple substitutes for reputational penalties. Increasing government-imposed penalties will reduce the use of reputational penalties, but the trade-off is not one-to-one.

Consider a simple case in which a single person is selling a product to consumers. Consumers value reducing the probability of being defrauded, but reducing that probability is costly. In the absence of government penalties, consumers can reduce the probability of fraud by having sellers face larger reputational losses or higher civil...
penalties for fraud. Reputational penalties are costly because they arise from the quasi-rents established when consumers pay high prices for high quality-assurance. Civil (and criminal) fines are also costly. In addition to administrative and enforcement costs, fines produce higher prices to customers of even legitimate sellers because higher fines increase legitimate sellers’ returns from protecting themselves against false charges of fraud.

At some total penalty level, the cost to consumers of extra fraud deterrence exceeds the incremental expected cost of the fraud. When the cost of fraud is low or when customers have lower cost alternative methods of insuring themselves against fraud, sellers will invest less in reputation and provide little quality-assurance. People who buy cars at flea markets are probably not making systematic mistakes -- they simply value additional quality-assurance less than do people who buy from new car dealers. Flea market customers are more likely to be defrauded, but they also pay lower prices for their cars. They also are probably people who can better evaluate car quality.

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7 Common law prohibits privately negotiated penalty clauses in civil cases. But if existing efficiency prohibitions are valid, they would seem to apply to government-determined criminal penalties as well. That is, if frauds are not punished sufficiently because civil fines are restricted, the efficient reform is to change the common law prohibition, not to increase criminal penalties.

We also distinguish between two issues: the mix of fines and reputation to police fraud, and whether private parties or government agents are better suited to determine the fine levels through civil or criminal procedures. To address the latter issue, one must examine whether the government has lower costs of determining the fine levels than do parties directly involved in the transactions. Block has argued that criminal fines involve a much more costly process than that involved with civilly imposed fines. Michael K. Block, “Optimal Penalties, Criminal Law, and the Control of Corporate Behavior,” 71 Boston University Law Review, (March 1991): 395-419 and John R. Lott, Jr., "The Optimal Level of Criminal Fines in the Presence of Reputation," United States Commission Working Paper (August 1988).

This argument clarifies why the optimal amount of fraud is not zero: at some point the costs of reducing the probability of fraud exceed the expected benefits. Furthermore, and despite the presence of fraud, there is no externality in this case. Fraud deterrence is purchased until the marginal cost equals the marginal benefit.

A role for criminal penalties arises when a fraud imposes external costs on other parties. However, not all frauds that directly affect third parties represent negative externalities. Suppose a fraud committed by one seller causes the customers of other similar sellers to invest more resources to assure quality and detect fraud. These extra costs may represent external costs of the fraud. But they may not. The fraud may simply reveal that the net gain to fraud is higher than the customers previously realized, and that greater investments in quality-assurance and fraud detection are optimal. Such customers may demand greater investment in reputation to ensure quality. Learning that it paid for the seller to commit fraud represents an external benefit, not a cost, because the detection of the fraud has informed the customers that the probability of being defrauded was higher than they had realized. The external benefit is not produced by the fraud itself, but rather, by the information that at least one seller considered fraud to be profitable. In fact, the sooner the information about the fraud is communicated, the shorter the period of time that consumers will be making purchases with less quality assurance then they would have purchased had they had the additional information.9

External costs arise when the seller committing the fraud has designed new methods that lower others' costs of committing frauds. The fraud may then motivate increased investment in quality-assurance because it increases the likelihood that other sellers will

9 Consumers also value learning about potential frauds sooner if it is costly for sellers to quickly change their investments in reputation.
also engage in fraud. The external cost arises because one seller's fraud lowers other sellers' costs of committing fraud.

For consumer fraud, externalities, and thus a role for criminal penalties, arise when the fraud represents an innovation in fraud technology. Even in these cases, however, it is the innovation that imposes the external cost, not the fraud itself. External costs of the fraud itself arise when the fraud corresponds with an innovation in fraud technology that changes the costs of other frauds occurring. We do not know the fraction of frauds that also represent innovations in fraud technology. But these cases surely represent a subset of actual frauds. For all other consumer frauds, privately contracted penalties will optimally internalize the expected cost of the fraud.

D. Substitution of Criminal Fines for Private Quality-Assurance

Since private quality-assurance mechanisms typically do not completely eliminate incentives to commit fraud, why not increase criminal penalties to deter fraud further? Can greater reliance on criminal penalties further reduce the incidence of fraud?

The answer depends on the substitutability of criminal penalties and reputation in deterring fraud. If criminal penalties and reputation are perfect substitutes, an increase in penalties will have no effect on the incidence of fraud. Increases in criminal penalties will simply reduce customers' reliance on reputation as a guarantor of quality.

However, criminal penalties typically are not perfect substitutes for reputation. As a result, an increase in the criminal penalty will cause a smaller decrease in reputational investments, causing an overall increase in sellers’ expected penalties. This will work to
decrease fraud occurrences. But if there are no externalities for the criminal penalty to internalize, the penalty increase will also harm consumers and dissipate wealth.

One reason penalties and reputation are not perfect substitutes is that reputation relies on the threatened loss of supracompetitive prices and their associated (quasi-) rents, while reliance on penalties does not. As Klein and Leffler point out, sellers will compete to obtain those rents by providing additional goods and services (e.g., information, comfort, etc.). A dollar increase in fines will deter fraud as much as a dollar of lost reputation, but customers will prefer reputation because the sunk investments that guarantee quality via reputation also yield other services. As long as customers attach a positive value to the services lost from a reduction in sunk investments, a dollar increase in fines must result in less than a dollar reduction in sunk investments if consumers are to remain indifferent. An increase in criminal penalties therefore will result in smaller than dollar-for-dollar reductions in reputational investments.

Another reason reputation and criminal fines are not perfect substitutes in guaranteeing quality is that some types of fraud are very costly for a third party such as a court to arbitrate, for example, the taste of a hamburger. Customers through the prospect of their repeat purchases can police such frauds more efficiently. Therefore, criminal penalties can protect consumers from only a subset of the frauds from which reputation protects them.

Furthermore, the net costs of criminal penalties increase at an increasing rate because the marginal substitutability of criminal penalties for reputation decreases with higher

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10 For simplicity, this discussion assumes that the probability of detection and punishment are the same for criminal fines and lost reputation.
penalties. Fines and reputation are most similar in their ability to protect customers when the frauds can be demonstrated to third parties. At low fine levels, a relatively large portion of the reputational investment protects consumers from the types of fraud for which fines are also effective; higher fines therefore will cause a relatively large decrease in reputation. As the fine level gets larger, however, reputation and fines become progressively less close substitutes because reputation is increasingly relied on to prevent frauds that are costly to demonstrate to third parties. Further increases in fines therefore cause relatively small reductions in reputation and larger increases in the total penalty for fraud.

To illustrate, assume that expected criminal penalties increase to the point where the fines alone completely internalize those damages from frauds that can be demonstrated to third parties. At that point, further increases in fines are unlikely to reduce reputation to zero because only reputation and not fines would be useful in preventing frauds that cannot be readily proved to third parties. Still further increases in fines would result in little or no reduction in the use of reputation.

Even if reputation and fines were perfect substitutes over a broad range of criminal penalties, there would come a level of fines such that the optimal level of reputational bonding is zero. Further increases in fines will then unambiguously result in higher total penalties. In fact, we show that the more extreme estimates of the U.S. Sentencing Commission’s recent penalty increases imply that this increase completely offsets our estimated values of the minimum reputational penalties sellers suffer when they are accused of fraud.
Because reputation and criminal penalties are not perfect substitutes, an increase in penalties increases sellers' total expected penalty of fraud. This works to deter some frauds, but it also increases the expected costs of all sellers, as even innocent sellers may have to defend against fraud charges and will take extra measures to decrease the chance of being accused of fraud.\(^\text{12}\) Some such measures will involve investing in production processes that provide a higher level of quality-assurance. That is, sellers will choose a higher level of quality-assurance than consumers would otherwise prefer.

An increase in criminal fines will also decrease sellers' abilities to meet demands for different levels of quality-assurance. Different sellers, or different product lines produced by the same seller, can meet the demands of different consumer clienteles by investing in different amounts of reputation. Criminal penalties that increase the total expected penalty, however, discourage sellers from providing low quality-assurance items. Flea markets may be hotbeds of fraud, but they satisfy a clientele of customers who attach a low value to buying additional quality-assurance. Such consumers undoubtedly value not being cheated, but they are relatively unwilling to pay for quality assurance. For example, they may have alternate means to determine quality or may suffer relatively low costs from fraud. Large criminal penalties can eliminate the flea markets, but at a net cost to customers who prefer the low levels of quality-assurance.

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\(^{12}\) The fact that many business people actively oppose increases in criminal penalties for corporate fraud, as indicated by the intense lobbying by the Business Roundtable on this issue, implies that these people expect their sellers to be guilty of fraud, or they expect their sellers' expected costs of defending against charges of fraud to increase with the criminal penalties even when the sellers are innocent. This latter possibility provides anecdotal evidence that Type II errors (accusing innocent sellers) are important for these sellers. (See Aaron Epstein, “Companies Resist Having Punishment Fit Big-Ticket Crimes,” Seattle Times and Seattle Post-Intelligencer, (April 22, 1990): A3.)
Robert Crandall, the Chief Executive Officer of American Airlines, illustrates the effects on consumers of imposing high criminal penalties on sellers in the following comment:  

Suppose [regulators] said, “We don't want you guys to lose our bags anymore. And every time you lose a bag we're going to fine you a million dollars.” Well, I can fix that tomorrow morning! We will never lose another bag. But it will be very inconvenient to travel. Today you come into Dallas-Fort Worth from all these different places, and in 45 minutes you make your connection and you go out. But in the world of the future, where bags are never lost, I'm going to keep you there for three hours, because I'm going to make sure I get every bag.

Increased penalties will reduce the number of bags lost, but at a cost most consumers would not pay voluntarily.

These arguments imply that higher criminal penalties can reduce the incidence of fraud, but at a cost. At the very least, higher criminal penalties force some consumers to pay for a higher level of quality-assurance than they would otherwise be willing to pay. It is also likely, however, that higher criminal penalties increase all consumers' costs, as all sellers' costs rise. This latter conclusion is supported by observation. Criminal penalties could conceivably be lower-cost guarantors of quality. But the fact that we observe very little private arbitration or other third-party enforcement of quality indicates that the additional cost of third-party penalties exceeds the benefit.

These conclusions directly contradict the current conventional wisdom on the topic, as represented by the U.S. Sentencing Commission’s guidelines that substantially increase criminal penalties for fraud. To this point, our argument has been based on the

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14 One third-party role we do not rule out is the role of a governing body to enforce agreements, as privately arbitrated decisions can be turned over to the public legal system to enforce. But it does not follow that governments have a comparative advantage in determining the penalty level upon conviction (see Lott supra note 5). Individuals are likely to have better information than a government about how much they value higher levels of quality assurance.
premise that private contracting controls and penalizes sellers that commit fraud. In the following sections, we present empirical evidence that supports this premise. The private wealth loss suffered by sellers alleged, indicted, or convicted of fraud is statistically significant and much larger than court-imposed penalties.

E. The Length of Prison

So how long should prison sentences be? Higher fines, greater reputational losses, larger collateral penalties, and longer prison sentences deter people committing crimes. But when these penalties are imposed can have a big difference on their level of deterrence. Fines, reputation, and collateral penalties can be entirely imposed on the criminal on the day that he is convicted. By contrast, while prison sentences can start right away, the punishment takes place over a number of years. The reason why this is particularly important for criminals is that there is strong empirical evidence that criminals have much higher discount rates than the general population. Compared to other people, criminals are unwilling to wait to have their desires satisfied. Discount rates of 30 percent or more seem quite plausible for criminals.

If a law-abiding citizen had a real discount rate of 4 percent, he would be willing to pay about $0.68 for a dollar ten years from now. But a criminal with a discount rate of 30 percent would only be willing to pay $0.07 for that same dollar. The problem is that means longer prison terms represent relatively little additional penalty for criminals. An additional year of prison twenty years from now is valued at less than one percent of the disutility of a year of prison today.
What this says is that the discount rate used to evaluate the cost of prison for society is likely to be radically different from the discount rate used to estimate the increased deterrence from adding an additional year onto a criminal's sentence.

There are also two reasons for prison. The first is deterrence, and the high discount rate for criminals is relevant for that. The second is incapacitation, keeping criminals from committing more crimes. A relatively small percentage of the population commits most of the crimes. Whether it is that certain people are callous to the harm the impose on others or it is simply their high discount rates, certain people are much more prone to committing crime than others. However, crime is a young person’s activity. Young males who are 18, 19, and 20 years old commit most murders. By the time a criminal is 45 he is likely to commit crime at about a sixth the rate that he would have done so at age 20 (see attached figure, unfortunately this type of data is only available for murder). This reduced incapacitation effect also reduces the benefit from longer prison sentences.
III. The Importance of Different Law Enforcement Strategies

Arrest rates of criminals is usually the single most important factor in reducing every type of crime. Sensational topics like the death penalty may get the most media attention, but it is everyday police work that really makes a neighborhood safer. Changes in the arrest rate account for around 16 to 18 percent of the drop in the murder rate.15 Conviction rates explain another 12 percent. Arrest and conviction rates have an even

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larger effect on other types of violent crime, while their effect on property crimes is often two or three times larger than for violent crime overall.

While boosting arrest rates indisputably has deterrence, the evidence on longer prison sentences is much less clear. The reason is simple: methodologically, it’s surprisingly difficult to measure how long criminals expect to be in prison. The length of a criminal’s sentence is often much longer than the actual time served. Furthermore, the time that is served varies widely, even for a single type of crime, depending on a suspect’s criminal history and the severity of the offense. Unfortunately, this kind of data is not readily available to researchers.

Arrest and conviction rates and expected prison sentence lengths all deal with deterrence—the cost to the criminal of committing a crime. But some people commit crimes despite those threats. Obviously, locking up the most crime-prone individuals will further decrease crime by keeping habitual criminals off the streets. Indeed, putting more people in prison explains another 10 to 12 percent of the drop in crime rates. Other factors also matter. Overall, the rise in executions during the 1990s accounts for about 12 to 14 percent of the overall drop in murders. Right-to-carry laws explain around another 6 percent.

Simply being arrested or convicted, even without a prison sentence, carries its own substantial penalties. Indeed, as noted earlier, these reputational penalties are the most meaningful penalties that many criminals face.

From a cost-benefit perspective, the ultimate question is: what did it cost for these different policies to produce their reductions in crime? Some rough calculations are

possible. For police, a one percent increase in non-unionized police with arrest powers lowers the murder rate by less than 0.65 percent.\textsuperscript{17} With starting police salaries averaging just below $40,000 per year (with benefits costing about $55,000) and a one percent increase in police equaling about 7,000 officers, that comes to about $385 million (not including training costs). Assuming a value of life at $4 million, the value of reduced murders is around $423 million. Other estimates have been made of the cost of crime by looking at jury awards for injuries to victims.\textsuperscript{18} Looking at these different types of crime puts the value from additional police at closer to $500 million.

While police are the single most important factor for reducing crime, concealed handgun laws might be the most cost effective. Increasing the percent of the adult population with concealed handgun permits by one percentage point reduces the murder rate by about four percent.\textsuperscript{19} Each additional law enforcement officer has a much bigger effect on the amount of crime than each additional citizen with a concealed handgun permit, but the cost of each additional law enforcement officer is also much bigger.

If permit holding policy was a national one, increasing the number of permit holders by about 2.25 million would imply 650 fewer murders in 2008 and the saving from fewer lives lost would equal about $2.6 billion. That comes to a benefit of about $1,156 per permit holder. The costs to state a government from issuing permits is essentially zero as most states actually make money on issuing concealed handgun permits. Given that someplace between 70 and 90 percent of permit holders already own a handgun, the primary cost of having new permit holders involves the cost of training (and about half

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the states don’t require formal training, though individuals appear to train even when it isn’t required). An eight-hour training course can easily cost two to three hundred dollars. In addition, there are the individual’s time costs to go through training.

**Externalities from Punishing Criminals**

While penalties will deter some criminals from committing crime, penalties can also cause criminals to shift to other types of crimes or to move to other areas to commit them. Ignoring these complications can bias estimated benefits or costs of law enforcement activity.

Suppose the death penalty were imposed on a crime such as robbery. If a robber thought that he was going to get caught by the police, he might find it in his interest to kill all the witnesses to his crime. He can only be executed once and he already faces execution for committing the robbery. In contrast, leaving the witnesses alive means that it might be easier for police to catch and convict him. The only factor that might work in the other direction is that police might spend more resources trying to catch a murderer than a robber and so murdering people could actually still increase the robber’s expected penalty.

On the other hand, the death penalty for murder might also work to reduce the rate that other crimes are committed. Because capital punishment can be imposed if a victim dies during the commission of a rape, robbery, or aggravated assault, statistics show the death penalty also acts as a deterrent to these crimes as well.\(^{20}\) This, however, doesn’t mean that the death penalty should be applied directly to these crimes.

The point is that externalities mean that one has to think more broadly in evaluating the costs and benefits of criminal penalties. In this case, one can’t measure the benefits of the death penalty by simply looking at the impact that this penalty has on robberies. Similar concerns have been pointed out for other penalties, such as three-strike laws, where there is also evidence of small increase in murders when criminals face life sentences.21

These types of “spillover” effects can also be seen in private actions to stop crime. Take right-to-carry laws, which allow law-abiding citizens to carry concealed handguns. While violent crimes fall after these laws are adopted and after more people get permits, there is some evidence that property crime rise. Criminals appear to switch out of violent crimes where criminals come into direct contact with victims, crimes that would be affected by the victims being able to defend themselves, and into property crimes where there is no contact between criminals and victims. So criminals may move out of a crime such as robbery and into larceny.

But criminals might also move from one jurisdiction to another. Stephen Bronars and I found significant evidence that criminals move out of areas where concealed handguns are legalized.22 Our study analyzed counties that border each other on opposite sides of a state line. In such cases, counties in states that adopt right-to-carry laws see a drop in violent crime that is about four times larger than the simultaneous increase in violent crimes in the adjacent counties without such laws. The spillover was greatest when you had two urban counties across the border from each other. These results imply that

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looking narrowly at the change in crime rates for states that adopt these right-to-carry laws will over estimate the benefit from the law.

**Other types of Externalities Regarding Crime**

In the early 1980s, James Q. Wilson and George L. Kelling articulated a persuasive new theory about crime.\(^{23}\) They argued that petty crime such as window breaking creates a vicious cycle whereby law-abiding citizens in a deteriorating neighborhood continually leave, to be replaced by criminals. If crime is rampant as evidenced by broken windows, criminals find it even easier to commit crimes with fewer law-abiding citizens around to witness them. So the key to fighting crime is to begin by cracking down on petty offenses. Some experts credit the huge drop in crime in New York City during the 1990s to a “broken windows” policy that strictly enforced laws against minor crimes like vandalism, public drunkenness, panhandling, and public urination.

**How the cost of catching criminals may vary with the size of the crime**

Prior to the US Sentencing Commission corporate penalty guidelines in the early 1990s, those who committed major environmental crimes—such as a massive oil spill from a tanker running aground—had to pay fines equivalent to the amount of the damages. In contrast, for minor environmental crimes—for example, dumping a barrelful of waste off the side of a ship—the fines were many times greater than the damage estimates. The commission reversed this relationship so that penalties for the more serious crimes became many times bigger than the damages. Understanding this pattern helps understand how the costs of catching criminals can sometimes vary with the harm done from the crime.

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While the new regulations seem logical, there was a sound reason for the earlier policy. A major oil spill is something that is nearly impossible to hide—we will know with near-certainty that the crime occurred and which ship was responsible. But it is much more difficult to identify the culprit—or even to detect the crime—for a smaller transgression like dumping just a barrelful of waste off the side of a boat. That’s why the Sentencing Commission’s policy change was actually counter-productive; if we want to create disincentives to environmental crime, we need to ensure that small-time offenders face relatively harsher penalties which act to offset the high probability that they’ll get away with their crime.

**Conclusion**

Penalties, police, and private actions by individuals all impact crime rates. Prison is all too frequently the only focus of legally imposed penalties, though there many other ways that criminals are punished. On the enforcement side, there are different choices there also. In law enforcement there are many areas where it won’t be possible to quantify the benefits or costs of different policies, but hopefully those areas where numbers are available can reduce the uncertainty facing decision makers in their final analyses. At the very least, the numbers that are available give decision makers a rough idea of how large other considerations will have to be to offset those factors that can be measured.