The Economic Case for Rewards Over Imprisonment

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BRIAN GALLE[*]

There seems to be a growing social consensus that the United States imprisons far too many people for far too long. But reform efforts have slowed in the face of a challenging question: How can we reduce reliance on prisons while still discouraging crime, particularly violent crime? Through the 1970s, social scientists believed the answer was an array of what I will call preventive benefits: drug and mental health treatment, housing, and even unconditional cash payments. But early evaluations of these programs failed to find much evidence that they were successful, confirming a then-developing economic theory that predicted the programs would fail.

This Article calls for a return to prevention. It first surveys evidence showing that a large fraction of prison spending has no incremental effect on crime reduction. And it offers the first detailed summary of the modern evidence on prevention. Preventive benefits have now been proven effective in a variety of settings. Along the way, I argue that a famous federal study of cash benefits was fundamentally misinterpreted as failure by its own authors.

Next, I lay out the theoretical economic case for preventive benefits. Standard theory rejects benefits because they are said to cost too much and to potentially encourage some individuals to engage in risky behavior in order to be paid to stop. I suggest both these arguments rely on evidentiary claims that have now been found to be largely false.

In addition, I collect and synthesize a series of theoretical reasons why benefits would outperform imprisonment. Among others, benefits enrich crime-stricken communities instead of further impoverishing them, as prison does. This simple fact has several important theoretical dimensions. I also show the ways in which the potential to deliver rewards ex ante, or before a crime has been committed, help to overcome a basic failing of prison: they do not require that humans be highly attentive to future consequences.

INTRODUCTION

The American penal system is badly broken, and everyone knows it. Our prison population exceeds the population of some industrialized nations.[1] A growing body of evidence finds that imprisonment incurs huge social costs, many borne disproportionately by communities of color, while producing surprisingly minimal reductions in crime.[2] The situation is so bad that a movement of scholars and activists have called for "abolition," for abandoning the project of imprisonment.[3] While few legislators would go so far, states are actively experimenting with and hunting for alternatives.[4] Democrats and Republicans in Congress have actually recently enacted modest reforms, and many on both sides of the aisle in that body continue to weigh more serious efforts.[5]

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1. *See* JEREMY TRAVIS, BRUCE WESTERN & STEVE REDBURN, NAT'L RESEARCH COUNCIL, THE GROWTH OF INCARCERATION IN THE UNITED STATES: EXPLORING CAUSES AND CONSEQUENCES 2 (2014).

2. *Id.* at 2, 5; Bruce Western & Becky Pettit, *Incarceration and Social Inequality*, DÆDULUS, Summer 2010, at 9–12.

3. PAUL BUTLER, CHOKEHOLD: POLICING BLACK MEN 229–31 (2017); Dorothy E. Roberts, *Foreword: Abolition Constitutionalism*, 133 HARV. L. REV. 1, 4–7 (2019); *Developments in the Law—Prison Abolition*, 132 HARV. L. REV. 1568, 1569–73 (2019).

4. John F. Pfaff, *The Complicated Economics of Prison Reform*, 114 MICH. L. REV. 951, 952 (2016); Tina Rosenberg, *On One Issue, Americans Are United. Too Many Are Behind Bars*, N.Y. TIMES (Oct. 30, 2019), http://www.nytimes.com/2019/10/30/opinion/on-one-issue -americans-are-united-too-many-are-behind-bars.html [https://perma.cc/M7AD-3HRE].

5. German Lopez, *The First Step Act, Explained*, VOX (Feb. 5, 2019, 9:42 PM), https://www.vox.com/future-perfect/2018/12/18/18140973/state-of-the-union-trump-first -step-act-criminal-justice-reform [https://perma.cc/T643-5M8F].

Abolition is by design a radical project,[6] but even radical change requires intermediate steps.[7] For those who don't share abolition's end goal but do desire major reductions in the U.S. prison population, what are the dramatic reforms lawmakers could enact that would make a meaningful dent in the American problem of crime and punishment? If we end prisons, what of crime?

Criminologists had a ready answer going into the 1970s.[8] At that time, the United States and other places around the world were experimenting with a variety of policies to prevent crime instead of punishing it.[9] Some of these policies were aimed at individuals, such as through early child intervention, financial support for families, substance abuse treatment, and small-group counseling.[10] Others focused on neighborhoods, aiming to create a sense of social cohesion and a law-abiding culture through community groups as well as investments in infrastructure.[11] Yet others examined the crime-preventing impact of broad social safety-net programs.[12]

But the tide turned swiftly. Early efforts to evaluate these experiments encountered challenging statistical methods problems that social science disciplines weren't yet ready to solve.[13] And, of course, the politics of punishment changed rapidly, especially in the United States, as crime grew dramatically.[14] Within a decade, crime prevention was utterly out of favor, and "tough on crime" was in.[15] The scholar William Stuntz and his intellectual heirs convincingly argued that "tough on crime" policies are often predictable results of U.S. political arrangements.[16]

It's time to reconsider prevention. The fledgling political movement toward reduced incarceration offers some hope that prevention programs can find consistent financial support. And decades of continuing research and innovation in social science methods offers a growing body of evidence that these programs are highly

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6. *See* Angela Y. Davis, Abolition Democracy: Beyond Prison, Torture, and Empire 96 (2005); Allegra M. McLeod, *Envisioning Abolition Democracy*, 132 Harv. L. Rev. 1613, 1616–20 (2019).

7. Allegra M. McLeod, *Prison Abolition and Grounded Justice*, 62 UCLA L. Rev. 1156, 1207–17 (2015).

8. Michael Tonry, Malign Neglect: Race, Crime, and Punishment in America 19 (1995); Francis T. Cullen & Paula Smith, *Treatment and Rehabilitation*, *in* The Oxford Handbook of Crime and Criminal Justice 156, 163–65 (Michael Tonry ed., 2011).

9. Brandon C. Welsh, *Crime Prevention*, *in* The Oxford Handbook of Crime and Criminal Justice 126, 127 (Michael Tonry ed., 2011).

10. *See id.* at 130.

11. *See id.*

12. *See id.*

13. Comm. on Rsch. on Law Enf't and Crim. Just., Nat'l Rsch. Council, The Rehabilitation of Criminal Offenders: Problems and Prospects 14, 27–34 (Lee Sechrest, Susan O. White & Elizabeth D. Brown eds., 1979).

14. Tonry, *supra* note 8, at 19–20.

15. Michael Rocque, Desistance from Crime: New Advances in Theory and Research 112–13 (2016); Welsh, *supra* note 9, at 128.

16. William J. Stuntz, The Collapse of American Criminal Justice 289 (2011); *see* Rachel Elise Barkow, Prisoners of Politics: Breaking the Cycle of Mass Incarceration 110–11 (2019); John F. Pfaff, Locked In: The True Causes of Mass Incarceration and How to Achieve Real Reform 53 (2017); Avlana K. Eisenberg, *Incarceration Incentives in the Decarceration Era*, 69 Vand. L. Rev. 71, 101–19 (2016).

effective, and indeed may be far more effective than incarceration at preventing crime.[17]

Yet not all the opposition to crime prevention programs has been based on politics or uncertain evidence. Economic theory has been staunchly opposed to positive incentives or "rewards" as tools for crime prevention.[18] Not every aspect of every prevention program is a reward—some include projects, like neighborhood watches, that would best be described as a more focused and more visible threat of punishment for wrongdoers. But most prevention efforts are devoted primarily to offering things of value to those who would otherwise commit crimes.

Probably the most straightforward example was the fledgling effort in Richmond, California, where the city paid high-risk young men bonuses, and offered other rewards such as expense-paid trips, for having a clean criminal record.[19] A similar program came close to passage in Washington, D.C.[20] In short, the idea is to offer things of value to individuals who might be likely to commit crime, but perhaps to condition those things on avoiding serious wrongdoing. In many cases the proposed benefits are not necessarily cash, but instead in-kind transfers, such as drug treatment programs or free tuition, of the sort that reformers believe would tend to further diminish the propensity to commit some crimes.

The relationship between crime and rewards also is an important but so far under-examined feature of the burgeoning literature on universal basic income. Popular authors, politicians, and scholars suggest providing flat payments to everyone in a society—or almost everyone.[21] Some proposals would eliminate or limit payments to individuals currently in prison, or those who otherwise have been convicted of certain offenses.[22] In many important respects, a new universal basic income (UBI)

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17. Travis, Western & Redburn , *supra* note 1, at 9; Cullen & Smith, *supra* note 8, at 166.

18. *See infra* Parts V, VI. My definition of "reward" is positive, not normative. In other words, throughout this article, I will treat a "reward" as any improvement from the currently expected baseline, whether or not we think the existing baseline is desirable. In this way, my analysis serves as a guide for how to depart from current policy, rather than what ideal policy would look like. For more discussion of this definition and a defense of the positive approach, see Brian Galle, *The Tragedy of the Carrots: Economics and Politics in the Choice of Price Instruments*, 64 Stan. L. Rev. 797, 803–05 (2012).

19. Byron Pitts & Meagan Redman, *This Once Dangerous California City Gives Young Men Money, All-Expense-Paid Trips in Exchange for Not Shooting*, ABC News (Sep. 25, 2016, 4:34 PM) https://abcnews.go.com/US/dangerous-california-city-young-men-money -expense-paid/story?id=38190781 [https://perma.cc/S2YJ-4VXW].

20. Karen Workman, *D.C. Crime Bill Would Pay People to Avoid Crimes*, N.Y. Times (Feb. 5, 2016), https://www.nytimes.com/2016/02/05/us/dc-crime-bill-would-pay-people-to -avoid-crime.html [https://perma.cc/JCN8-YU5C].

21. *See, e.g.*, Annie Lowrey, Give People Money: How a Universal Basic Income Would End Poverty, Revolutionize Work, and Remake the World 1–11 (2018); Andrew Yang, The War on Normal People: The Truth About America's Disappearing Jobs and Why Universal Basic Income is in Our Future 165–75 (2018); Philippe van Parijs & Yannick Vanderborght, Basic Income: A Radical Proposal for a Free Economy and a Sane Economy 4–28 (2017).

22. *E.g.*, Philippe van Parijs, *Basic Income: A Simple and Powerful Idea for the Twenty-First Century*, 32 Pol. & Soc'y 7, 11 (2004) (stating it is "obvious" that prisoners should not

program that denies benefits to those convicted of a crime is not much different than the Richmond program. But none of the UBI proponents has given any serious consideration to this potentially very important feature of UBI design.

As it happens, the United States already has a UBI that is denied to individuals who commit felonies: the Alaska Permanent Fund Dividend (APFD). The APFD is an annual payment from the state of Alaska to every Alaska resident, representing a proportional share of the state's revenues from the sale of oil-extraction permits.[23] But since 1989, individuals who are incarcerated for a felony during a given calendar year receive no dividend payout.[24] No commentator has examined the economic or other policy logic of this rule.[25]

Opposition to rewards follows a basic economic logic that has been popular among theorists, both of crime and regulatory theory more generally. Economic theorists of crime, to the extent that they consider rewards at all, tend to reject them out of hand for two basic reasons. For one, the theorists say, rewards are far less cost-effective than prison.[26] Rewards must be paid to everyone who stays straight, while we need imprison only the (relatively) few who commit crime.[27] For another, rewards could actually increase crime.[28] If we limit rewards only to individuals in "high risk" groups, the presence of the reward could lead some people to want to become "high risk."

This Article argues that these two theoretical objections are vastly overstated. Recent research has shown that imprisonment is a remarkably cost-ineffective tool for preventing crime.[29] Sentences of many years produce little more deterrence than

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receive a universal basic income (UBI), but that they should be eligible after release); Miranda Perry Fleischer & Daniel Hemel, *Atlas Nods: The Libertarian Case for a Basic Income*, 2017 WIS. L. REV. 1189, 1224–25 (suggesting that a conditional UBI would likely reduce crime).

23. Christopher L. Griffin, Jr., *The Alaska Permanent Fund Dividend and Membership in the State's Political Community*, 29 ALASKA L. REV. 79, 82–83 (2012).

24. ALASKA STAT. § 43.23.005(d) (2019).

25. The only public justification for the exclusion was that it is intended to offset the costs of victim compensation and prison. State v. Anthony, 810 P.2d 155, 159 (Alaska 1991). A recent working paper examines empirically the impact the dividend has on propensity to commit crimes. Richard Dorsett, *Basic Income as a Policy Lever: A Case Study of Crime in Alaska* (Westminster Bus. Sch., Working Paper No. 2019/002, 2019).

26. Isaac Ehrlich, *Crime, Punishment, and the Market for Offenses*, 10 J. ECON. PERSP. 43, 64 (1996); Donald Wittman, *Liability for Harm or Restitution for Benefit?*, 13 J. LEGAL STUD. 57, 65 (1984).

27. *See* Giuseppe Dari-Mattiacci & Gerrit De Geest, *Carrots, Sticks, and the Multiplication Effect*, 26 J.L. ECON. & ORG. 365, 369–71 (2010).

28. *See* Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 42 (1960); Ehrlich, *supra* note 26, at 54; *see also* Anu Bradford & Omri Ben-Shahar, *Efficient Enforcement in International Law*, 12 CHI. J. INT'L L. 375, 385 (2012) (making this point about transfers to deter hostile state action); Zachary D. Kaufman, *Protectors of Predators or Prey: Bystanders and Upstanders amid Sexual Crimes*, 92 S. CAL. L. REV. 1317, 1399 (2019) (noting this as a potential downside of rewards for reporting crimes); Jonathan Baert Wiener, *Global Environmental Regulation: Instrument Choice in Legal Context*, 108 YALE L.J. 677, 726 (1999) (making this point about environmental regulation).

29. *See* Aaron Chalfin & Justin McCrary, *Criminal Deterrence: A Review of the Literature*, 55 J. ECON. LITERATURE 5, 37–38 (2017); Daniel S. Nagin, *Deterrence: A Review*

a sentence of just a few, and yet we routinely imprison individuals for decades.[30] Imprisonment does reduce crime by "incapacitating" young men, keeping them off the streets, but this benefit largely disappears as men age and their propensity to commit crimes drops precipitously.[31] Through some rough calculations, I claim that these facts, combined with some sensible design features that could be implemented with most reward programs, make rewards highly competitive with imprisonment on a crime-reduction-per-dollar basis. Likewise, the notion that rewards would increase crime ignores a vast literature on the economics of insurance.[32] Insurers face similar problems, and their many modern solutions offer a variety of policy templates for lawmakers interested in rewards.

Even aside from these counterarguments, the economic study of crime has failed to recognize that economic theory in fact supplies a set of very compelling arguments in favor of rewards over imprisonment. In some cases other authors have made note of one or another of these individual arguments. But so far as I know, there is no prior comprehensive effort to bring together all the competing claims for and against rewards as a way of preventing crime.[33] That failure has profound consequences, for once we see all the arguments together in one place, it becomes clear that the intellectual case for rewards is overwhelming.

For example, theorists of crime have largely neglected the importance of two fundamental features of rewards that, according to economists, strongly favor rewards in other contexts.[34] By definition, rewards make their recipients richer, while imprisonment causes suffering that does not create gain for anyone else. Canonical accounts of the economics of punishment rely on these facts to argue that fines, not imprisonment, are the best way to regulate human behavior.[35] We resort to prison only because most people cannot pay. The same logic implies that rewards are also superior to prison, and superior to fines too. Rewards are not limited by the ability of the defendant to pay. And rewards make the defendant richer, when we know that households with higher lifetime income are less likely to commit crime.

So, too, criminal theorists have long known that imprisonment is a poor fit for human psychology.[36] Most humans are bad at planning for tomorrow, but a system of deterrence depends entirely on the notion that the threat of long-distant future pain

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of the Evidence by a Criminologist for Economists, 5 ANN. REV. ECON. 83, 85–88, 100 (2013).

30. *See infra* text accompanying notes 42–53.

31. *See infra* text accompanying notes 306–13.

32. *See infra* text accompanying notes 266–90.

33. The only close antecedent is a brief discussion section in an unpublished paper, in which the author mentions but does not analyze several factors that he believes might be relevant. Murat C. Mungan, *Positive Sanctions Versus Imprisonment*, 23–25 (George Mason Univ. Law & Econ. Rsch. Paper Series, Paper No. 19-03, 2019), https://papers.ssrn.com/sol3 /papers.cfm?abstract_id=3317552 [https://perma.cc/BK3Q-TD33]. The paper also offers a formal model of the importance of transferability in the case for rewards, and I discuss that issue in some depth in Part II, *infra*.

34. *See infra* Parts II, III.

35. *See infra* notes 124–27.

36. *See* Christine Jolls, *On Law Enforcement with Boundedly Rational Actors*, *in* THE LAW & ECONOMICS OF IRRATIONAL BEHAVIOR 268, 272–81 (Francesco Parisi & Vernon L. Smith eds., 2005); Paul H. Robinson & John M. Darley, *Does Criminal Law Deter? A Behavioral Science Investigation*, 24 OXFORD J. LEGAL STUDS. 173, 175–97 (2004).

will keep us on the straight and narrow today. Rewards can be designed to flip this dynamic. Reward systems can be engineered to offer small, certain, and current incentives to individuals to commit themselves to crime-avoidance programs. That is, the reward is magnified because it is offered today, while the possible future cost of being bound by our commitments is diminished because it will be paid tomorrow.

Admittedly, it is likely that employing rewards by themselves may fall short of the ideal policy. In many of the separate points I examine, economic theory suggests that the best result might instead be a combination of rewards with imprisonment or other punishments, but with the punishments being far smaller in magnitude than we see currently in the United States. Thus, I can be taken to offer not a blueprint for prison abolition, but instead a path that leads in that direction.

I also don't mean to suggest that I have any special insights into the political obstacles that a systematic program of crime-preventing rewards might face. But to the extent that political opposition derives ultimately from intellectual opposition by serious scholars, I offer reason to believe that existing opposition rests on grounds that are, at best, not fully considered.

As a last introductory note, I should mention that my primary method here is utilitarian. Many legal theorists instead approach crime and punishment from a "retributivist" framework, in which an important question is how to match the moral weight of a punishment to the offender's moral wrong.[37] Since in large measure my goal is to identify how to prevent crime from occurring at all, I can mostly sidestep the issue of the morality of punishing. But I should also note that I agree with the claim that retributivism is fundamentally misguided to the extent that it attempts to assign moral blame solely to wrongdoers.[38] Social science now makes a compelling case that it is society's choices that put many individuals in the position where they must choose between injuring others and their own suffering (or the suffering of their family).[39] A just criminal justice system should recognize, as Michael Seidman suggests, that preventing crime is a burden for all of society to share.[40]

Part I of this Article begins by examining the available empirical evidence on the efficacy of prevailing tools for crime prevention and offers the reader some examples to keep in mind of what an effective rewards program might look like. Parts II through IV then examine three key economic arguments that predict rewards would

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37.   Michael S. Moore, *The Moral Worth of Retribution, in* RESPONSIBILITY, CHARACTER, AND THE EMOTIONS: NEW ESSAYS IN MORAL PSYCHOLOGY 179, 181–82 (Ferdinand Schoeman ed., 1987). Some approaches combine both perspectives. For instance, a few influential commentators have suggested that retributivist theory can supply an upper limit on just punishments, while utilitarian theories can influence what sentence should be chosen within those limits. Michael Tonry, *Punishment, in* OXFORD HANDBOOK OF CRIME AND CRIMINAL JUSTICE 95, 103–07 (Michael Tonry ed., 2011) (tracing this argument to H. L. A. Hart); TRAVIS, WESTERN & REDBURN, *supra* note 1, at 87.

38.   *See, e.g.*, EDGARDO ROTMAN, BEYOND PUNISHMENT: A NEW VIEW OF THE REHABILITATION OF CRIMINAL OFFENDERS 118–19 (1990); TONRY, *supra* note 8, at 4–5, 158–59.

39.   TONRY, *supra* note 8, at 4–5, 158–59.

40.   Louis Michael Seidman, *Soldiers, Martyrs, and Criminals: Utilitarian Theory and the Problem of Crime Control*, 94 YALE L.J. 315, 342–45 (1984).

be far more effective. Parts V and VI consider and reject traditional claims against rewards.

I. REWARDS IN CONTEXT

Although there are many potential ways of conceptualizing crime prevention,[41] my focus here is on the subset of practices that typically involve providing people with things they value. In some cases, but not necessarily all, these transfers are conditioned on the recipient refraining from crime, or are targeted to individuals or populations who are thought to be especially at risk of engaging in criminalized behaviors. As we'll see over the next few Sections, it's typically this combination of features—enriching the recipient, and conditioning the benefit on abstaining from risky behaviors they would otherwise be prone to—that form the main grounds for debate about reward mechanisms. Meanwhile, it may be helpful for the reader to have a sense of the range of real-world examples of these policies.

I also want to show at the outset the real stakes involved. The design of a criminal justice system should be based in evidence. Many reward-type programs now have solid social science findings of their effectiveness. Indeed, the evidence for the effectiveness of rewards is now far more convincing than the evidence that prison deters crime. That fact forms the necessary foundation for all my subsequent analysis.

A. Preventative Benefits: Overview and Evidence

To begin, there is little evidence that prison actually deters.[42] A number of older papers, many from the 1980s, claim to find deterrent effects of imprisonment, but these studies are unreliable. One set of papers looks at simple correlations between crime rates and sentence lengths. That correlation, if any, tells us little because the causation can flow in either direction; voters panicked about high crime may authorize higher sentences, for instance.[43] Several other studies find extremely low

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41. *E.g.*, McLeod, *supra* note 7, at 1218–32.

42. Probably the most convincing direct evidence is David S. Lee & Justin McCrary, *The Deterrence Effect of Prison: Dynamic Theory and Evidence*, *in* 38 ADVANCES IN ECONOMETRICS 73, 76, 89–90 (2017) (finding that a doubling of the prospective sentence would reduce offending by no more than about 10%). For surveys, see Chalfin & McCrary, *supra* note 29, at 26, 37–38; Jeffrey Fagan & Tracey L. Meares, *Punishment, Deterrence and Social Control: The Paradox of Punishment in Minority Communities*, 6 OHIO ST. J. CRIM. L. 173, 181–82 (2008); Nagin, *supra* note 29, at 85–88; *see also* Steven N. Zane, Brandon C. Welsh & Daniel P. Mears, *Juvenile Transfer and the Specific Deterrence Hypothesis*, 15 CRIMINOLOGY & PUB. POL'Y 901, 902–24 (2016) (conducting meta-analysis of studies examining impact of changes in date individual can be charged as adult, and concluding that on average there were no significant effects of criminal liability on crime).

43. *See* Nagin, *supra* note 29, at 86 (dismissing the correlational studies on this basis); *cf*. Chalfin & McCrary, *supra* note 29, at 25 (noting that first "credible" study with this design emerged in 1994, but stating that it was "useful" but not "compelling").

"elasticities," or rates of response, between length of sentence and commission of crimes.[44]

One recent paper does convincingly find deterrent effects for repeat offenders (i.e., that prison reduces recidivism).[45] That paper reports that tougher sentencing guidelines reduce recidivism for shoplifters, but the experience of being sentenced by a tougher sentencing judge does not.[46] This suggests that the observed reduction in recidivism is not because the defendant is still in jail, but instead is because they perceive a greater cost of re-offending. Guidelines have no impact on drunk driving, however.[47]

By far the largest estimates of prison's deterrence capacity come from studies of a dramatic policy shift in Italy, when the Italian government announced in 2006 it would release nearly two-fifths of prisoners to relieve prison overcrowding.[48] Many released individuals would have had to serve the entire remaining balance if they reoffended. Individuals with longer suspended sentences recidivated less, implying that the threat of a longer sentence deterred more.[49] It is not clear how readily these results translate to ordinary sentencing. They focus only on recidivism. The pardon received massive publicity, and the threat of the future sentence was uniquely well-known and certain for each offender, whereas the typical potential offender has very little direct knowledge of likely sentences.[50] Offenders with longer suspended sentences may also have believed that they faced an elevated chance of detection— that is, believed the police would be more motivated to catch them.

To the extent that prison deters at all, evidence suggests that short but certain sentences are far more effective than long sentences.[51] Even in the best-case

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44. Eric Helland & Alex Tabarrok, *Does Three Strikes Deter? A Nonparametric Estimation*, 42 J. HUM. RES. 309, 310–29 (2007); Randi Hjalmarsson, *Crime and Expected Punishment: Changes in Perceptions at the Age of Criminal Majority*, 11 AM. L. & ECON. REV. 209, 239–44 (2009); Steven Raphael & Jens Ludwig, *Prison Sentence Enhancements: The Case of Project Exile*, *in* EVALUATING GUN POLICY: EFFECTS ON CRIME AND VIOLENCE 251, 252–53 (Jens Ludwig & Philip Cook eds., 2003).

45. Sarah M. Estelle & David C. Phillips, *Smart Sentencing Guidelines: The Effect of Marginal Policy Changes on Recidivism*, 164 J. PUB. ECON. 270 (2018).

46. *Id*. at 281–84, 288–89.

47. *Id*. at 289. In another related result, Mehdi Barati, *Punishment Severity and Crime: The Case of Arkansas*, 15 REV. L. & ECON. 1, 2 (2018), reports that a change in Arkansas law to reduce some thefts from "Class D Felony" to misdemeanor corresponded with a six percent increase in theft arrests. As with many such studies, it is difficult to rule out omitted variables, such as changes in enforcement decisions by police officers, as confounding factors. Taking this result at face value, though, implies a very small elasticity. A Class D felony carries a six-year maximum sentence, while misdemeanors carry sentences of no more than one year. ARK. CODE ANN. § 5-4-401 (2010). The implied elasticity is -6%/500% = -.012.

48. Francesco Drago, Roberto Galbiati & Pietro Vertova, *The Deterrent Effects of Prison: Evidence from a Natural Experiment*, 117 J. POL. ECON. 257, 258 (2009).

49. *Id*.; Giovanni Mastrobuoni & David A. Rivers, Criminal Discount Factors and Deterrence 17–21 (May 19, 2017) (unpublished manuscript), http://publish.uwo.ca/~drivers2/research/Criminal_Discount_Factors_5_19_17.pdf [https://perma.cc/366X-B96V].

50. Chalfin & McCrary, *supra* note 29, at 10–12; Hjalmarsson, *supra* note 44, at 245.

51. TRAVIS, WESTERN & REDBURN, *supra* note 1, at 5; Thomas A. Loughran, Ray Paternoster, Aaron Chalfin & Theodore Wilson, *Can Rational Choice Be Considered a*

scenarios for the threat of prison providing deterrent effects, the marginal impact of added prison time diminishes rapidly—that is, the longer the sentence, the smaller the impact of added time.[52] Individuals highly discount distant-future costs, so that after about five years, the marginal deterrent effect of additional imprisonment is close to zero.[53]

Drug treatment programs are probably the most obvious and highest-return prevention tactic.[54] A huge share of individuals in prison—more than half of some offender categories—are there at least in part because they committed their crime to obtain drug money or because they were under the influence of drugs or alcohol.[55] Research finds that drug treatment programs can be highly effective in preventing criminal behavior.[56] Not all programs are effective, of course, but a common thread for those that work is that they work to identify the highest-risk individuals, assess those individuals' needs—drug dependency, low employability, unrestrained impulsivity—and match treatment to need.[57] Mental health is also highly associated with criminal activity, and similar efforts at treating behavioral disorders likely have substantial returns as a result.[58]

General Theory of Crime? Evidence from Individual-Level Panel Data, 54 CRIMINOLOGY 86, 89, 101–02 (2016); Nagin, *supra* note 29, at 87, 100.

52. Mastrobuoni & Rivers, *supra* note 49, at 19–20. As I noted earlier, Estelle and Phillips, *supra* note 42, find a deterrent effect from changes in Michigan sentencing guidelines, but the sentencing ranges for the relatively minor offenses they study are predominantly under two years. *Id.* at 275–76.

53. Mastrobuoni & Rivers, *supra* note 49, at 42 Fig. 5. I should acknowledge that, if the Mastrobuoni and Rivers result is driven by offender expectations about enforcement efforts (i.e., those with longer suspended sentences think they are more likely to be caught re-offending), that could offer a rival explanation. Police motivations might increase for longer sentences, but this effect might be diminishing with very long sentences.

54. BUTLER, *supra* note 3, at 234; Jonathan P. Caulkins & Mark A.R. Kleiman, *Drugs and Crime*, *in* OXFORD HANDBOOK OF CRIME AND CRIMINAL JUSTICE 275, 306 (Michael Tonry ed., 2011); Ojmarrh Mitchell, *Drug and Other Specialty Courts*, *in* OXFORD HANDBOOK OF CRIME AND CRIMINAL JUSTICE 843, 844 (Michael Tonry ed., 2011).

55. Nazgol Ghandnoosh, *Minimizing the Maximum: The Case for Shortening All Prison Sentences*, *in* SMART DECARCERATION: ACHIEVING CRIMINAL JUSTICE TRANSFORMATION IN THE 21ST CENTURY 137, 150 (Matthew Epperson & Carrie Pettus-Davis eds., 2017); *see also* NATIONAL INSTITUTE OF JUSTICE, 2000 ARRESTEE DRUG ABUSE MONITORING: ANNUAL REPORT (Apr. 2003) (reporting that 63% of arrestees in Miami, Florida, tested positive for a controlled substance); David A. Anderson, *The Deterrence Hypothesis and Picking Pockets at the Pickpocket's Hanging*, 4 AM. L. & ECON. REV. 295, 303 tbl. 1 (2002) (reporting that two-thirds of surveyed offenders reported that "recent drug use" contributed to commission of crime); *see also* Benjamin Hansen & Glen R. Waddell, *Legal Access to Alcohol and Criminality*, 57 J. HEALTH ECON. 277, 278–88 (2018) (finding large jump in assaults after individual passes legal drinking age).

56. Cullen & Smith, *supra* note 8, at 169–70; Mitchell, *supra* note 54, at 844.

57. Mitchell, *supra* note 54, at 844.

58. *See* Yvonne Jewkes, *Prisons*, *in* OXFORD HANDBOOK OF CRIME AND CRIMINAL JUSTICE 872, 887 (Michael Tonry ed., 2011) (noting that one-third of those incarcerated have a diagnosed mental disorder). For surveys of the efficacy of mental-health diversion programs, see Virginia Aldigé Hiday & Padraic J. Burns, *Mental Illness and the Criminal Justice System*, *in* HANDBOOK FOR THE STUDY OF MENTAL HEALTH 478, 493–95 (Teresa L. Scheid & Tony N.

Vocational and educational programs have also been shown to reduce recidivism, both in the United States and around the world.[59] Typically, these are programs made available to incarcerated individuals who are nearing their release date,[60] but there is little about the concept that would limit enrollment strictly to those who have already offended. Over time, research has helped to refine the design of training programs, identifying and motivating the elimination of ineffective approaches.[61] Modern programs attempt to identify enrollees who would benefit the most from the (typically scarce) available seats by using algorithmic assessments of those who are most at risk of re-offending.[62]

Housing benefits are especially promising and deserve more attention in the criminal justice literature.[63] The best-known evidence comes from studies of the "Moving to Opportunity" demonstration project run by the U.S. Department of Housing and Urban Development.[64] Treated households received vouchers to move to new neighborhoods. Violent crime fell; property crimes increased in the short run, but not overall. Recent studies involving quasi-random assignment of refugees in Denmark,[65] and from the demolition of U.S. housing projects, reach similar results.[66] This suggests location may have an important impact on crime, at least for some offenses. Violent crime, for instance, has been found to often be motivated by a desire for social status among the offender's peers.[67] Relocation, by changing the peer environment, might remove this motivation.[68] In contrast, property crimes might be

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Brown eds., 2d ed. 2010).

59. Aaron Chalfin & Steven Raphael, *Work and Crime*, *in* OXFORD HANDBOOK OF CRIME AND CRIMINAL JUSTICE 444, 457–58 (Michael Tonry ed., 2011); Alicia Sasser Modestino, *How Do Summer Youth Programs Improve Criminal Justice Outcomes, and for Whom?*, 38 J. POL'Y ANALYSIS & MGMT. 600, 601–27 (2019); Faye S. Taxman & Amy Murphy, *Community Interventions for Justice-Involved Individuals*, *in* SMART DECARCERATION: ACHIEVING CRIMINAL JUSTICE TRANSFORMATION IN THE 21ST CENTURY 192, 193–94 (Matthew W. Epperson & Carrie Pettus-Davis eds., 2017); Manudeep Bhuller, Gordon B. Dahl, Katrine V. Løken & Magne Mogstad, *Incarceration, Recidivism, and Employment*, 128 J. POL. ECON. 1269 (2020).

60. Taxman & Murphy, *supra* note 59, at 200.

61. *Id.* at 206.

62. *Id.* at 194–95.

63. One already thorough treatment, including the observation that vouchers are not useful if landlords are free to discriminate against voucher holders, is BUTLER, *supra* note 3, at 143–47.

64. *See* Mirko Draca & Stephen Machin, *Crime and Economic Incentives*, 7 ANN. REV. ECON. 389, 398 (2015) (summarizing studies on the Moving to Opportunity demonstration project).

65. Anna Piil Damm & Christian Dustmann, *Does Growing Up in a High-Crime Area Affect Youth Criminal Behavior?*, 104 AM. ECON. REV. 1806, 1807–31 (2014).

66. Dionissi Aliprantis & Daniel Hartley, *Blowing It Up and Knocking It Down: The Local and City-Wide Effects of Demolishing High Concentration Public Housing on Crime*, 88 J. URB. ECON. 67, 68–80 (2015).

67. Loughran, Paternoster, Chalfin & Wilson, *supra* note 51, at 101; Fagan & Meares, *supra* note 42, at 186–87. Peer groups may also affect risk perception, which can weaken the deterrent effects of the criminal justice system. Robinson & Darley, *supra* note 36, at 180.

68. *Cf.* DAVID J. HARDING, LIVING THE DRAMA: COMMUNITY, CONFLICT, AND CULTURE AMONG INNER-CITY BOYS 68–131 (2010) (describing role of neighborhood peers in teen

crimes of opportunity, and of course opportunities for profitable theft are usually greater when the individual is moved to richer neighborhoods.

If many crimes are committed to secure social status, then the criminal justice system has so far mostly overlooked an important potential source of rewards.[69] Governments can compete with private sources of status by offering reputational rewards for good behavior.[70] Reputation mechanisms are common in the regulation of business enterprises, where customer goodwill translates directly to dollars, but some of these techniques could also be applied to individuals.[71] For instance, a recent experiment in Pakistan found that rich tax avoiders became more compliant when they had a chance to appear on a government list of the biggest taxpayers.[72] More prosaically, the relocation studies show that government can break the relationship between violent crime and status by changing a potential offender's peer group. This doesn't have to be done only geographically; it could also be achieved by helping at-risk individuals to form new social bonds, such as through community organizations, recreational opportunities, or, most powerfully, new schools.[73]

This may well be the dynamic at work behind the successful implementations of "comprehensive community initiatives."[74] These programs offer a range of social services for impoverished communities, often youth-focused and aimed at

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violence).

69. An exception is Fagan and Meares, *supra* note 42, at 182–212, which considers the relationship between formal legal sanctions and "informal social controls," and emphasizes the role community plays in crime prevention. Similarly, Tracey L. Meares, Neal Katyal, and Dan M. Kahan, *Updating the Study of Punishment*, 56 STAN. L. REV. 1171, 1196 (2004), observe that enhancing the perceived legitimacy of the criminal justice system can be a cost-effective method for reducing crime. There is of course a robust literature on the reverse side of this coin: the use of shaming as a penalty. *E.g.*, Dan M. Kahan & Eric A. Posner, *Shaming White-Collar Criminals: A Proposal for Reform of the Federal Sentencing Guidelines*, 42 J.L. & ECON. 365, 368–72 (1999).

70. For a more complete discussion of the challenges and rewards of reputational incentives generally, see Kristen Underhill, *When Extrinsic Incentives Displace Intrinsic Motivation: Designing Legal Carrots and Sticks to Confront the Challenge of Motivational Crowding-Out*, 33 YALE J. ON REGUL. 213, 272–73 (2016).

71. Ezra Goldschlager, *Praise and the Law*, 49 CREIGHTON L. REV. 353, 369–89 (2016).

72. Joel Slemrod, Obeid Ur Rehman & Mazhar Waseem, *Pecuniary and Non-Pecuniary Motivations for Tax Compliance: Evidence from Pakistan*, (Nat'l Bureau of Econ. Rsch., Working Paper No. 25623, 2019), http://www.nber.org/papers/w25623; *see also* Paul E. Carillo, Edgar Castro & Carlos Scartascini*, Do Rewards Work? Evidence from the Randomization of Public Works* (Inter-Am. Dev. Bank, Working Paper No. IDB-WP-794, 2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3103797 [https://perma.cc/QX5E -E96Y] (finding a short-term improvement in tax compliance from public recognition of randomly selected compliers).

73. *Cf.* Jeffrey Fagan, *Cessation of Family Violence: Deterrence and Dissuasion*, *in* 11 FAM. VIOLENCE 377, 403, 408 (Lloyd Ohlin & Michael Tonry eds., 1989) (arguing that cessation from crime requires changes in social networks, physical locales, or both). Studies find powerful peer effects from classmates. *E.g.*, Jinho Kim & Jason M. Fletcher, *The Influence of Classmates on Adolescent Criminal Activities in the United States*, 39 DEVIANT BEHAV. 275, 275–91 (2018) (showing five percent increase in classmate offending correlated with three percent increase in own offending).

74. Welsh, *supra* note 9, at 127.

developing a sense of communal solidarity.[75] These may be combined with other vaguely punitive interventions that also promote a sense of community, such as neighborhood watches or patrols.[76] A version of the community initiative known as "communities that care" (CTC) combined these features with a public-health type scientific approach, identifying and targeting factors that were predictors of crime.[77] A randomized controlled trial found that CTC reduced crime community-wide.[78] More generally, social attachments reduce crime, and so programs with this social focus often produce measurable benefits.[79]

Other community-level efforts have also been found to significantly prevent crime. Successes include several programs aimed at parents, including outreach and training on effective parenting, especially parenting children who exhibit antisocial behavior.[80] Cleanup programs, such as remediating blighted lots, enforcing housing codes, and installing streetlights, reduce crime both in the affected areas and in neighboring locations.[81] Mentoring and high-quality after-school programs work too.[82] And perhaps the largest success story in this category is early childhood education, where a well-known and long-running study has followed the lives of children who were randomized into a carefully designed pre-K program.[83]

What about direct cash payments? In a famous set of 1976 experiments, the U.S. Department of Labor (DOL) set out to test the impact of paying released inmates in Georgia and Texas a large fraction of the full-time minimum wage.[84] The experimenters declared the policy a failure, and further expansions were never attempted.[85] But the researchers misunderstood their own experiment. As they

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75. *Id.*

76. *Id.*

77. *Id.* at 128.

78. J. David Hawkins, Eric C. Brown, Sabrina Oesterle, Michael W. Arthur, Robert D. Abbott, & Richard F. Catalano, *Early Effects of Communities That Care on Targeted Risks and Initiation of Delinquent Behavior and Substance Use*, 43 J. ADOLESCENT HEALTH 15, 16–22 (2008). For additional discussion of the "communities that care" initiative, see J. David Hawkins, *Preventing Crime and Violence Through Communities That Care*, 7 EUR. J. CRIM. POL'Y & RSCH. 443 (1999).

79. ROCQUE, *supra* note 15, at 154–56.

80. Welsh, *supra* note 9, at 132–36.

81. *Id.* at 140–41.

82. *Id.* at 137–39.

83. James J. Heckman, Seong Hyeok Moon, Rodrigo Pinto, Peter A. Savelyev & Adam Yavitz, *The Rate of Return to the High/Scope Perry Preschool Program*, 94 J. PUB. ECON. 114 (2010); *see also* Frances A. Campbell, Elizabeth P. Pungello, Margaret Burchinal, Kirsten Kainz, Yi Pain, Barbara H. Wasik, Oscar A. Barbarin, Joseph J. Sparling & Craig T. Ramey, *Adult Outcomes As a Function of an Early Childhood Education Program: An Abdecedarian Project Follow-Up*, 48 DEV. PSYCH. 1033, 1034–42 (2012) (finding benefits in randomized controlled trial of early childhood education program for low-income families); David Deming, *Early Childhood Interventions and Life-Cycle Skill Development: Evidence from Head Start*, 1 AM. ECON. J.: APPLIED ECON. 111, 112–33 (2009) (reporting that Head Start program reduces subsequent adult crime among enrolled children).

84. Richard A. Berk, Kenneth J. Lenihan & Peter H. Rossi, *Crime and Poverty: Some Experimental Evidence from Ex-Offenders*, 45 AM. SOCIO. REV. 766, 767–70 (1980).

85. *Id.* at 777; *see also* Karen M. Needels, *Go Directly to Jail and Do Not Collect? A*

reported, holding a job reduced recidivism.[86] And, controlling for hours worked, receiving the DOL's payments reduced recidivism too.[87] The problem, the researchers explained, was that receiving the payments also reduced the releasee's likelihood of working, and so the net effect of the program was no impact on recidivism.[88]

But a remarkable feature of the experiment's design explains its failure. Every dollar the releasees received in wages reduced their payment from the DOL by one dollar. There was no control group that received payments without this "tax" structure.[89] It's hardly surprising, then, that the DOL's payments reduced work—the payments were subject to a 100% marginal tax rate![90] Not many people would go to work, especially in the demanding conditions available to recently incarcerated individuals in Georgia and Texas in 1976, when going to work does not yield any net pay.

If anything, then, the experiment's finding that payments reduce recidivism should have been understood as a success story, and evaluations of other policies confirm that. For instance, for a brief period in the late 1970s, California allowed individuals released from prison to collect unemployment benefits if they had hit certain hours-worked targets while incarcerated. This policy reduced recidivism by about 13%.[91] A small-scale experiment with cash payments in Baltimore also reduced thefts by about 27%.[92]

Lastly, there is strong evidence that general social safety -net programs often have the added benefit of reducing crime. For example, recent work finds that the minimum wage,[93] supplemental nutrition assistance (the erstwhile "food stamps"

Long-Term Study of Recidivism, Employment, and Earnings Patterns Among Prison Releasees, 33 J. RSCH. CRIME & DELINQ. 471, 474 (1996) (conducting follow-up study with same group of offenders and describing results of the initial experiment as "disappointing"). This negative finding was especially influential because of the prominence of the researchers; Rossi, for example, was at that time the President of the American Sociological Association.

86.   Berk, Lenihan & Rossi, *supra* note 84, at 781.

87.   *Id.*

88.   *Id.* at 777.

89.   The experiment included one treatment group with pay subject to only a 25% tax rate, but those subjects apparently were not accurately informed about the rate and believed it was also 100%. *Id.* at 769 tbl.1, 775 n.8.

90.   The marginal rate did drop to zero once participants worked enough weekly hours that their wages exceeded the DOL payment. But this would have required twenty to thirty hours of unpaid work for most of the participants. Even full-time work would have yielded an average tax rate of upwards of 50%.

91.   Richard A. Berk & David Rauma, *Capitalizing on Nonrandom Assignment to Treatments: A Regression-Discontinuity Evaluation of a Crime-Control Program*, 78 J. AM. STAT. ASS'N. 21, 25–26 (1983).

92.   KENNETH J. LENIHAN, U.S. DEP'T LAB., *UNLOCKING THE SECOND GATE: THE ROLE OF FINANCIAL ASSISTANCE IN REDUCING RECIDIVISM AMONG EX-PRISONERS* 7 (1977), https://files.eric.ed.gov/fulltext/ED134704.pdf [https://perma.cc/5LT9-UQUL].

93.   Pallab K. Ghosh, Gary A. Hoover, & Zexuan Liu, *Do State Minimum Wages Affect the Incarceration Rate?*, 86 S. ECON. J. 845, 857 (2019); Dorsett, *supra* note 25, at 5–6 (reporting that Alaskan dividend payment reduced property crimes, and this effect was stronger when the payment was unconditional).

program),[94] and the earned-income tax credit[95] each reduce crime. Alaska's Permanent Dividend Fund payments reduced crime, and this effect was actually stronger when criminal offenders were eligible to receive payments. [96] While none of these programs are likely to be cost-justified on the basis of their crime-reducing power alone, crime reduction should be included in the benefit side of any cost-benefit analysis of the safety net.

B. How Benefits Are Delivered

Many rewards systems use officials within the existing criminal-justice system as intermediaries to help target preventive outlays to the right people. Sometimes the officials are prosecutors, as in the "community prosecutor" model piloted in Milwaukee.[97] Milwaukee's Community Prosecution Unit is intended to prevent crime at the neighborhood level. The Unit gathers information from partner community groups and from police officers on the beat.[98] It then works to solve potential problems before they lead to crimes and arrests.[99] It diverts some offenders to mental-health treatment.[100] It may refer drug users to treatment or send those struggling to make ends meet to resources available through nearby community organizations or the government.[101]

In other instances judges are the intermediaries, as in the so-called "community," "problem-solving," or other specialty courts.[102] Drug courts are a common example.[103] The standard drug court involves low-level offenders with substance-abuse problems. Rather than sentencing these defendants to jail, the court instead gives them access to substance-abuse counseling and treatment, albeit sometimes at the threat of incarceration if they fail to comply with drug-quitting protocols.[104]

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94.   Cody Tuttle, *Snapping Back: Food Stamp Bans and Recidivism*, 11 AM. ECON. J.: ECON. POL'Y 301, 302–26 (2019).

95.   Amanda Y. Agan & Michael D. Makowsky, *The Minimum Wage, EITC, and Criminal Recidivism* 14–15, 21 (Nat'l Bureau of Econ. Rsch., Working Paper No. 25116, 2019), https://papers.ssrn.com/sol3/Papers.cfm?abstract_id=3097203 [https://perma.cc/97K6-GCPC].

96.   Dorsett, *supra* note 25. I explore the likely explanation for this surprising result in Part III, *infra*. It is worth noting that universal payments funded through an income tax might not be as effective as the Dividend Fund because the income tax presumably would be imposed only on legal-sourced income, creating a larger wedge between legal and illegal returns. Fleischer & Hemel, *supra* note 22, at 1224–25. To my knowledge, there is no empirical evidence on the effect of tax rates (other than the EITC) on crime or recidivism.

97.   John Chisholm & Jeffery Attenburg, *The Prosecutor's Role in Promoting Decarceration*, *in* SMART DECARCERATION: ACHIEVING CRIMINAL JUSTICE TRANSFORMATION IN THE 21ST CENTURY 71, 79 (Matthew W. Epperson & Carrie Pettus-Davis eds., 2017).

98.   *Id.* at 78.

99.   *Id.* at 76, 78.

100.   *Id.* at 76–77, 83.

101.   *Id.* at 79, 81.

102.   Kathryn Bocanegra, *Community and Decarceration: Developing Localized Solutions*, *in* SMART DECARCERATION: ACHIEVING CRIMINAL JUSTICE TRANSFORMATION IN THE 21ST CENTURY 115, 124 (Matthew W. Epperson & Carrie Pettus-Davis eds., 2017).

103.   Mitchell, *supra* note 54, at 844.

104.   *Id.* at 846, 853.

Several high-quality evaluations have found drug and community courts to reduce recidivism and improve treatment outcomes, but other forms of specialty courts have not yet proven their efficacy.[105]

As Allegra McLeod observes, not all instantiations of these courts are genuine alternatives to punishment, and many in fact can exert more control over defendants than a standard court.[106] In her preferred model, the problem-solving court fully diverts individuals from the criminal-justice system, instead connecting them with treatment, job and housing placement, and other essential services.[107] Courts and other policy makers monitor and experiment with the system continually to improve its performance.[108] Drug diversion and other treatment options can be made a part of sentencing guidelines, as several states have done, potentially reducing concerns about arbitrariness or discrimination in who is granted access.[109]

Lastly, police departments, too, can and do serve as prevention intermediaries. In the most common "community policing" approaches, police departments work either to vigorously enforce minor but visible offenses (the "broken windows" approach), to identify problems that are likely to lead to demands for policing before they fester, or some combination thereof.[110] The programs I focus on—those that omit broken windows enforcement—operate at some "distance" from the criminal justice system, in the sense that they work to avoid situations where an individual would be actually subject to arrest. Others, though, incorporate diversion even post-arrest, giving officers the option of "street diversion," sending accused offenders to alternative treatment programs rather than to court.[111] As with problem-solving courts, some advocates argue that using police as intermediaries is inherently problematic, posing the danger that mingling social services and law enforcement will tend to criminalize poverty.[112] Empirical evidence so far shows only modest returns to these forms of policing on average.[113]

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105. Bocanegra, *supra* note 102, at 124; Brian D. Johnson*, Sentencing*, *in* THE OXFORD HANDBOOK OF CRIME AND CRIMINAL JUSTICE 696, 719–20 (Michael Tonry ed., 2011).

106. Allegra M. McLeod, *Decarceration Courts: Possibilities and Perils of a Shifting Criminal Law*, 100 GEO. L.J. 1587, 1612–44 (2012); *see also* ISSA KOHLER-HAUSER, MISDEMEANORLAND 3–10 (2018) (describing how New York City's misdemeanor courts acquire "managerial" power over offenders); Jessica M. Eaglin, *The Drug Court Paradigm*, 53 AM. CRIM. L. REV. 595, 597 (2016) (raising concerns that drug-court model "expand[s] the scope of state control over the lives of those entangled in the [criminal] justice system").

107. McLeod, *supra* note 106, at 1595–96.

108. *Id.* at 1650; *see* Michael C. Dorf & Charles F. Sabel, *Drug Treatment Courts and Emergent Experimentalist Government*, 53 VAND. L. REV. 831, 841–52 (2000).

109. Johnson, *supra* note 105, at 719.

110. Chalfin & McCrary, *supra* note 29, at 18–20; Michael D. Reisig, *Community and Problem-Oriented Policing*, *in* OXFORD HANDBOOK OF CRIME AND CRIMINAL JUSTICE 538, 538–40 (Michael Tonry ed., 2011).

111. Mary D. Fan, *Street Diversion and Decarceration*, 50 AM. CRIM. L. REV. 165, 167 (2013); *see* Barbara Fedders, *Opioid Policing*, 94 IND. L.J. 389, 429–33 (2019).

112. *Cf.* Roberts, *supra* note 3, at 16–18, 27 (describing "entangled" state of "[p]ublic welfare programs" and law enforcement, and arguing that "order-maintenance" policing gives officers "wide discretion to control black people's presence on public streets").

113. *See* Chalfin & McCrary, *supra* note 29, at 19–20; Reisig, *supra* note 110, at 566.

To be sure, such efforts are likely to be only one component of a larger strategy for transforming the criminal justice system. At their current scale and budget, intermediated diversion programs and their like may replace only a fraction of the role prison now plays.[114] We now know that local economic conditions, including the strength of social safety-net programs and even minimum wage laws, impact recidivism.[115] It's likely they have similar impacts on initial entries into criminality.

Thus, broad-based spending programs aimed at these problems can likely also be evaluated through my framework. As we'll see, even the most unconditional of programs, such as a universal basic income, share certain key structural features with a more targeted initiative such as street diversion. But there are also important differences. In the Conclusion, I discuss the trade-offs my analysis suggests for these alternative paths to decarceration. For now, let's consider the theoretical case against prison.

II. REWARDS REDUCE DEADWEIGHT LOSS

A crucial reason to favor rewards over prison is that rewards avoid the massive deadweight loss incarceration causes. "Deadweight loss" is an economist's term for costs that society incurs that produce nothing in return.[116] It's the technical equivalent of lighting money on fire.

Unlike rewards, prison wastes resources in two different ways. For one, as experts have long recognized, prison fails to transfer the defendant's pain.[117] That is, the suffering of a defendant in prison doesn't improve anyone else's life. Of course, prison deters, and that is useful, but one could impose an equal amount of suffering through a "transfer" instrument, such as a fine, and then use the fine revenues for useful government projects, victim restitution, or the like. In addition, prison reduces social well-being by injuring innocent third parties without producing anything useful in return. I'll now unpack both these points.

A. Transfers

It's hard to understate how important the difference between transfer and transferless instruments can be. Suppose you have two policy options. Both cost $10 billion to enact. One provides $10 billion in benefits, the other $16 billion. Which would you implement?

Swapping from transferless to transfer instruments can produce swings this big and bigger. Imagine that we want to deter people from dumping mercury into rivers

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114. *See* MARIE GOTTSCHALK, CAUGHT: THE PRISON STATE AND THE LOCKDOWN OF AMERICAN POLITICS 97, 100, 106 (2015).

115. *See* Chalfin & Raphael, *supra* note 59, at 458 (showing higher offending rates for those suffering from unemployment and lower potential wages).

116. JONATHAN GRUBER, PUBLIC FINANCE AND PUBLIC POLICY 51–52 (3d. ed. 2011).

117. *See* A. Mitchell Polinsky & Steven Shavell, *The Theory of Public Enforcement of Law*, *in* 1 HANDBOOK OF LAW AND ECONOMICS 403, 411–12 (A. Mitchell Polinsky & Steven Shavell eds., 2007); Murat C. Mungan, *Positive Sanctions Versus Imprisonment*, 4–5 (Geo. Mason L. Econ. Rsch. Paper Series, Paper No. 19-03, 2019), ssrn.com/abstract=3317552 [https://perma.cc/C2G5-28WB].

and streams. We estimate that with a new mercury restriction at the optimal level of deterrence, we could avoid $10 billion worth of damage to human health and the environment from reduced mercury dumping.[118] Reducing mercury is not costless, however. For one, those who comply with the new regulation must undertake costly efforts to avoid spills.[119] Let's call this figure $4 billion. And then let's say that for some mercury polluters, the costs of avoiding spills are less than the expected cost of being caught. These emitters will suffer the penalty rather than pay to avoid it. Call this amount $6 billion.[120]

Should we enact the new mercury limitation regime? If our penalty is purely transferless (say, polluters are forced to consume mutant fish that grow in contaminated rivers),[121] probably not. We must count the suffering of defendants in our social calculus—they're people too.[122] If the system costs anything at all to

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118. The "optimal" deterrence is the level of dissuasion at which the marginal social costs of compliance are exactly equal to the marginal social benefits from additional deterrence. GRUBER, *supra* note 116, at 139. In other words, we don't want people to spend more to comply than society would gain from their compliance. *Id.* at 122–23. Nor do we want people to stop complying when there are additional cost-effective compliance steps still available. This brief description omits many important details (for instance, does it matter who pays and who would suffer if the pollution weren't abated?) that aren't pertinent for our discussion. Of course, calculating the optimal point is contentious and often uncertain, but its details are not relevant to my discussion here. For a helpful survey of the literature, see generally Gloria E. Helfand, Peter Berck & Tim Maull, *The Theory of Pollution Policy*, *in* HANDBOOK OF ENVIRONMENTAL ECONOMICS 249 (Karl-Goran Maler & Jeffrey R. Vincent eds., 2003).

119. This is the reason we likely do not want to reduce mercury emissions to zero. The cost of preventing each additional unit of mercury is probably greater than the last—the marginal cost curve slopes upwards. At some point, to prevent every last drop of mercury, we'd have to forego all fossil fuels and live as Stone Age hunter-gatherers who hadn't yet discovered coal. Again, regulatory theory thus suggests instead that we limit mercury reduction to its "optimal" amount, or the point at which added expenses wouldn't produce benefits that were at least as big. GRUBER, *supra* note 116, at 139.

120. Punishment is likely to be more socially costly than compliance expenditures, at least if calculated per unit of pollution. Those for whom it is cheaper to comply than be punished do so, and therefore compliers necessarily spend less per unit of compliance than the penalty they would suffer.

121. *See The Simpsons: Two Cars in Every Garage and Three Eyes on Every Fish* (Fox television broadcast Nov. 1, 1990).

122. In the past, commentators would sometimes argue that criminal defendants' utility should be omitted from social welfare calculations. *E.g.*, J.L. Lewin & W.N. Trumbull, *The Social Value of Crime?*, 10 INT'L REV. L. & ECON. 271, 275–78 (1990); George J. Stigler, *The Optimum Enforcement of Laws*, 78 J. POL. ECON. 526, 527 (1970). It's never been clear why. The standard line was that criminals' preferences are "immoral" and should be excluded on this basis. Lewin & Trumbull, *supra* note 122, at 275–78. That position made no sense in economic analysis, since a key justification for the normative appeal of welfare maximization in an economic framework is exactly that it avoids making judgments about the worth of anyone's preferences. Allowing regulators to refuse to include some people's preferences gives license to the policy maker to shortchange unpopular views. And it presents unmanageable line-drawing questions, many of which would predictably be resolved in favor of those with greater political power. Can we ignore the preferences of individuals who steal but not those who conspire to monopolize a market?

administer, our regime is a net loser. It produces $10 billion in benefits and costs regulated parties $10 billion total. So it yields $0 in net benefits and likely costs additional money to administer.[123]

Alternatively, what if the mercury emitter pays a fine instead? Then there are still $10 billion in costs for the regulated parties. But our benefits have changed. We have $10 billion worth of mercury reduction and also $6 billion worth of revenue from fines with which we can now do as we please. We therefore have a project that produces a $6 billion surplus (less administrative costs), a likely huge winner.

For this reason, economists of crime have been steady advocates for replacing prison with fines and restitution, but they recognize that fines have an inherent limitation.[124] You can only fine someone as much as they can afford to pay (or borrow or acquire insurance for).[125] In the past I've called this the "liquidity problem."[126] Often, this amount is far less than the optimal sanction amount. Thus, most deterrence regimes ultimately resort to prison as a way of overcoming the liquidity constraint and fully deterring offenders.[127]

Using rewards instead of either fines or imprisonment offers the best of both worlds.[128] The reward is a transfer instrument: it costs taxpayers money, but it also makes the recipient better off, so that the net cost is far smaller than a prison sentence would likely offer.[129] And the reward amount has no natural limit. In fact, rewards are arguably even less constrained than prison. We can only imprison someone for one lifetime, but there's no cap to the amount of cash we can offer them. Admittedly, though, after a certain point additional cash probably loses its incentive value.

The difference between rewards and prison isn't quite as stark as the simple examples I just gave, however, because it turns out that it matters who is paying and who is receiving transfers. That is, transferring $6 billion to mercury polluters may not be the best use of $6 billion. If society could have made more productive use of that money, we likely should count the difference between the two as a loss.[130] Even if the government has no additional spending programs that would produce value, it could still have cut taxes by $6 billion. This is actually a pretty good use of cash, since taxes are socially costly—they change people's behavior, creating another kind of deadweight loss.[131] So by giving the money to the polluters, we must have higher

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123. For simplicity, I assume the regulator has only two choices: enact the $10 billion mercury restriction or not. Often, the regulator could instead enact a less stringent policy with, say, only $9 billion in benefits. If this policy carries only $8.5 billion in costs, it is more attractive than either the $10 billion policy or doing nothing. But I ruled out this possibility when I stipulated that the $10 billion policy was the optimal, i.e., the best available.

124. Polinsky & Shavell, *supra* note 117, at 411–12, 19; Ehrlich, *supra* note 26, at 63.

125. A. Mitchell Polinsky & Steven Shavell, *A Note on Optimal Fines When Wealth Varies Among Individuals*, 81 AM. ECON. REV. 618, 618–19 (1991).

126. Brian Galle, *In Praise of Ex Ante Regulation*, 68 VAND. L. REV. 1715, 1738–42 (2015).

127. Polinsky & Shavell, *supra* note 117, at 421; Ehrlich, *supra* note 26, at 63.

128. For a formal model, see Mungan, *supra* note 117, at 7–11.

129. Brian Galle, *Tax, Command . . . or Nudge?: Evaluating the New Regulation*, 92 TEX. L. REV. 837, 848–49 (2014).

130. *Id.* at 849–50.

131. GRUBER, *supra* note 116, at 590–93.

taxes, and this is costly to the extent that the $6 billion in tax revenue produced deadweight losses. This net burden is often called the "marginal cost of public funds" —that is, the waste that comes along with raising another dollar for the fisc.[132]

Another difference between the real world and my example is that prison also involves some transfers. Although inmates' suffering is nontransferable, there are people who build prisons and guards who patrol them.[133] And the funds to pay the builders and guards must be paid for with taxes, again incurring a deadweight loss in an amount depending on the marginal cost of public funds.

With a simple thought experiment, we can ignore the role of the marginal cost of public funds. Suppose that we were to take half our prison budget, whatever it is, and use it for rewards instead. Taxes remain the same, so it doesn't matter how costly they are to impose and collect.

In this framework, the choice between rewards and prison becomes in part a question of whether we prefer money to be in the hands of potential offenders or prison operators. Economics generally refuses to prioritize the well-being of some people over others.[134] But it recognizes that, because of the diminishing marginal utility of wealth, we may prefer to transfer money to people who have less of it.[135] If Richie has $1,000, he might buy nicer champagne to serve on his yacht. If Po has $1,000, she will spend it on life-saving drugs. In other words, Po receives greater utility from each incremental dollar she spends than Richie does.[136] Rewards might be preferable to prison, then, to the extent that they tend to transfer money to poorer households on average.

Either way, rewards will certainly have a welfare advantage over prison to the extent of any suffering experienced by those in prison. To see this, consider a very simple balance sheet summary of the two possibilities in our thought experiment:

	Reward	**Prison**
Cost	($1b)	($1b)
Guards	$0	$1b
Defendants	$1b	($X)
Potential victims	$2b	$2b
Net	$2b	$2b - $X

On our balance sheet, $X is the suffering (in dollar terms, or any other measure of utility we might decide to employ) of the incarcerated. Numbers in parentheses are negative numbers. Assuming a dollar is equally useful in the hands of guards and defendants, it is clear that prison is worse off by the amount $X.

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132. Agnar Sandmo, *Redistribution and the Marginal Cost of Public Funds*, 70 J. Pub. Econ. 365, 366 (1998).

133. Sonja B. Starr, *On the Role of Cost-Benefit Analysis in Criminal Justice Policy: A Response to the Imprisoner's Dilemma*, 98 Iowa L. Rev. Bull. 97, 106 (2013).

134. *See* Richard Posner, *An Economic Theory of the Criminal Law*, 85 Colum. L. Rev. 1193, 1197 (1985).

135. Gruber, *supra* note 116, at 609.

136. Of course, while diminishing marginal utility is the typical response to added resources, individuals may differ in the extent to which their utility diminishes. Economic models work with estimates of population-level averages.

Of course, this isn't the whole story. I've assumed in my thought experiment that prison and rewards are equally cost-effective: that is, that we would obtain equal amounts of crime prevention (on the balance sheet, this is the value delivered to potential victims) for our $1 billion investment. That needn't be the case. If prison were far more cost-effective, the difference between the two could be quite narrow, or even favor prison. Or the opposite might be true, as the evidence I reviewed in Part I could suggest. I'll return to some factors that contribute to relative efficacy in Part VI.

B. Negative Externalities

Imprisonment is also wasteful to the extent that it damages third parties without any incremental deterrent effect. Prison punches holes in society. Inmates cannot care for their spouses or children, cannot volunteer for their local church, cannot serve on juries or (usually) vote.[137] Individuals in prison contribute little economically to their home community, stripping high-crime areas of demand for legitimate goods and services and sapping their sources of able labor.[138] Replacing existing workers who are sentenced to prison can be costly for employers.[139] Often, government services must strive to fill these holes, leading to higher taxes or fewer services elsewhere.[140] High-crime areas also usually see a large number of recently released individuals returning to the neighborhood, often with poor job prospects and serious health needs, and these place added burdens on the economic and social fabric of the community.[141]

Recent data suggest the magnitude of some of these effects. For example, multiple studies find that the incarceration of the mother of a young child has a devastating impact on the educational attainment, income, and even health of her child.[142] In a large sample of low-income households, families with a recently incarcerated father

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137. BARKOW, *supra* note 16, at 46–49; Matthew W. Epperson & Carrie Pettus-Davis, *Smart Decarceration: Guiding Concepts for an Era of Criminal Justice Transformation*, *in* SMART DECARCERATION: ACHIEVING CRIMINAL JUSTICE TRANSFORMATION IN THE 21ST CENTURY 3, 7 (Matthew W. Epperson & Carrie Pettus-Davis eds., 2017).

138. Demetra Smith Nightingale & Harold Watts, *Adding It Up: The Economic Impact of Incarceration on Individuals, Families, and Communities*, *in* THE UNINTENDED CONSEQUENCES OF INCARCERATION 91, 96–97 (Vera Inst. of Just. ed., 1996); Kevin M. Drakulich, Robert D. Crutchfield, Ross L. Matsueda & Kristin Rose, *Instability, Informal Control, and Criminogenic Situations: Community Effects of Returning Prisoners*, 57 CRIME, L. & SOC. CHANGE 493, 498–99 (2012) (summarizing other studies); Dorothy E. Roberts, *The Social and Moral Cost of Mass Incarceration in African American Communities*, 56 STAN. L. REV. 1271, 1293–94 (2004).

139. *See* Steven Raphael, *The Effects of Conviction and Incarceration on Future Employment Outcomes*, *in* LABELING THEORY: EMPIRICAL TESTS 237, 239–40 (David P. Farrington & Joseph Murray eds., 2014) (modeling costs to employer of replacing incarcerated workers).

140. PFAFF, *supra* note 16, at 119.

141. Drakulich, Crutchfield, Matsueda & Rose, *supra* note 138, at 495–96, 513–14; Todd R. Clear, *The Effects of High Imprisonment Rates on Communities*, 37 CRIME & JUST. 97, 103, 107–08, 115 (2008); Roberts, *supra* note 138, at 1294.

142. TRAVIS, WESTERN & REDBURN, *supra* note 1, at 6; Western & Pettit, *supra* note 2, at

were twice as likely to receive SNAP and Medicaid.[143]

Rewards, on the contrary, might provide spillover benefits or "positive externalities" over and above their crime-preventing benefits. A growing body of evidence on unconditional cash payments finds an array of benefits, and thus far little sign of significant downsides.[144] Most obviously, an individual who shares a household or other close relationship with children, parents, or a non-working partner can also share their reward, benefitting all of them.[145] Cash-payment recipients in some settings also seem to have higher educational attainment, possibly because the payments free them to spend more time in school and less making rent. [146] Educational attainment benefits not just the recipient but also future employers and dependents.[147]

A classic worry about government payouts, whether cash or otherwise, is that they will discourage recipients from working.[148] Several studies of unconditional cash transfers have now searched for and found no evidence of substantial negative impact on work hours.[149] Similarly, researchers have long failed to find much evidence that

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143. Naomi F. Sugie, *Punishment and Welfare: Paternal Incarceration and Families' Receipt of Public Assistance*, 90 Soc. Forces 1403, 1404–26 (2012).

144. *E.g.*, Johannes Haushofer & Jeremy Shapiro, *The Short-Term Impact of Unconditional Cash Transfers to the Poor: Experimental Evidence from Kenya*, 131 Q.J. Econ. 1973, 2025 (2016). Some of these results are subject to meta-analysis in Frank Pega, Sze Yan Liu, Stefan Walter, Roman Pabayo, Ruhi Saith & Stefan K. Lhachimi, *Unconditional Cash Transfers for Reducing Poverty and Vulnerabilities: Effect on Use of Health Services and Health Outcomes in Low- and Middle-Income Countries*, Cochrane Database of Systematic Rev., 2017, at 3, https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858 .CD011135.pub2/epdf/full [https://perma.cc/2XFN-EJFD]. For a helpful overview of the findings in the U.S. context, see Ioana Marinescu, *No Strings Attached: The Behavioral Effects of Unconditional Cash Transfer Programs* 5–10 (Nat'l Bureau of Econ. Rsch., Working Paper No. 24337, 2018).

145. Marinescu, *supra* note 144, at 9.

146. *Id.*; *see* Sarah Baird, Francisco H.G. Ferreira, Berk Özler, & Michael Woolcock, *Conditional, Unconditional and Everything in Between: A Systematic Review of the Effects of Cash Transfer Programmes on Schooling Outcomes*, 6 J. Development Effectiveness 1, 2–42 (2014) (surveying other studies).

147. *See* Heckman, Moon, Pinto, Savelyev & Yavitz,, *supra* note 83, at 119–22.

148. Van Parijs & Vanderborght, *supra* note 21, at 133.

149. Randall K.Q. Akee, William E. Copeland, Gordon Keeler, Adrian Angold & E. Jane Costello, *Parents' Incomes and Children's Outcomes: A Quasi-Experiment Using Transfer Payments from Casino Profits*, 2 Am. Econ. J.: Applied Econ. 86, 87–114 (2010); Derek Hum & Wayne Simpson, *Economic Response to a Guaranteed Annual Income: Experience from Canada and the United States*, 11 J. Labor Econ. 263, 264–95 (1993); Andrew Bibler, Mouhcine Guettabi & Matthew Reimer, Universal Cash Transfers and Labor Market Outcomes 3 (Feb. 25, 2020) (unpublished manuscript) (available at https://papers.ssrn.com /sol3/papers.cfm?abstract_id=3357230 [https://perma.cc/USU4-9QT7]); Damon Jones & Ioana Marinescu, *The Labor Market Impacts of Permanent Cash Transfers: Evidence from the Alaska Permanent Fund* 3 (Nat'l Bureau of Econ. Rsch., Working Paper No. 24312, 2020); *see also* Marinescu, *supra* note 144, at 7–8. The largest estimate comes from Robert M. Feinberg & Daniel Kuehn, *Guaranteed Nonlabor Income and Labor Supply: The Effect of the Alaska Dividend Fund*, B.E. Journal of Economic Analysis & Policy, 2018, DOI:

higher tax rates discourage work among most parts of the population.[150]

The exceptions are working mothers.[151] Econometric studies generally agree that social welfare programs can reduce the labor supply of low-income moms.[152] Other researchers find that higher tax rates can discourage women whose husbands earn large salaries from entering the workforce.[153] Both of these results suggest that women place a very high value on being home with their children—or that finding replacement childcare is very costly—so that relatively small changes in the returns

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https://doi.org/10.1515/bejeap-2018-0042   [https://perma.cc/JL5C-EDFY],   who   find elasticities of about -.1 (that is, labor supply falls by .1% for every 1% increase in guaranteed income).

A small reduction is, as noted in Hilary W. Hoynes and Jesse Rothstein, *Universal Basic Income in the U.S. and Advanced Countries* 20 (Nat'l Bureau of Econ. Rsch., Working Paper No. 25538, 2019), consistent with strong evidence in other contexts that work supply falls modestly when incomes rise. *See also* Jones & Marinescu, *supra* note 149, at 1–2 (noting this finding in studies of lottery winners but questioning whether it would apply to broad-based programs that also affect labor demand). Effects are most notable for those at the margins of the work force. For instance, there is evidence that access to large cash transfers speed retirement for older workers. *E.g.*, Werner Hernani-Limarino & Gary Mena, *Intended and Unintended Effects of Unconditional Cash Transfers: The Case of Bolivia's* Renta Dignidad 68–69 (Inter-Am. Dev. Bank, Working Paper No. IDB-WP-631, 2015), http://hdl.handle.net/10419/146439 [https://perma.cc/6KRN-H54H]. In addition, some papers report that transfers delay entry into the paid workforce, especially for young men, but these men likely use the resulting time to acquire more education, so that net effects on labor output are ambiguous. Laura Juárez González & Tobias Pfutze, *The Effects of a Non-Contributory Pension Program on Labor Force Participation: The Case of 70 y Más in Mexico* 19 (Banco de México, Working Paper No. 2014-12, 2014).

150. Emmanuel Saez, Joel Slemrod, & Seth H. Giertz, *The Elasticity of Taxable Income with Respect to Marginal Tax Rates: A Critical Review*, 50 J. ECON. LITERATURE 3, 4 (2012) ("[E]vidence of a substantial compensated labor supply elasticity has been hard to find . . . ."). Recent work underlines earlier findings that responses are concentrated in those at the edges of the labor pool—school-age workers, potential retirees, and working mothers. Jósef Sigurdsson, Labor Supply Responses and Adjustment Frictions: A Tax-Free Year in Iceland 4–5 (Sept. 21, 2019) (unpublished manuscript) (available at https://papers.ssrn.com/sol3 /papers.cfm?abstract_id=3278308 [https://perma.cc/7VLP-VZXD]). Reported earnings are also more responsive among the self-employed. Isabel Z. Martinez, Emmanuel Saez & Michael Siegenthaler, *Intertemporal Labor Supply Solution? Evidence from the Swiss Income Tax Holidays* 20 (Nat'l Bureau of Econ. Rsch., Working Paper No. 24634, 2018).

151. *See* Bibler, Guettabi & Reimer, *supra* note 149, at 3 (noting that women's labor supply decreased slightly in response to dividend payments while men's increased). *But see* Martinez, Saez & Siegenthaler, *supra* note 150, at 22–24 (finding larger responses for Swiss men).

152. Hilary Williamson Hoynes & Diane Whitmore Schanzenbach, *Work Incentives and the Food Stamp Program*, 96 J. PUB. ECON. 151, 152–61 (2012); Thomas Lemieux & Kevin Milligan, *Incentive Effects of Social Assistance: A Regression Discontinuity Approach*, 142 J. ECONOMETRICS 807, 808–27 (2008); *see* Hoynes & Rothstein, *supra* note 149, at 18–19 (reviewing studies, but suggesting that some of labor impact may be due to stigma, not payments). *But see* Robert Moffit, *Welfare Programs and Labor Supply*, *in* 4 HANDBOOK OF PUBLIC ECONOMICS 2393, 32–41 (Alan J. Auerbach & Martin Feldstein eds., 2002) (reporting that studies to that date did not clearly establish any negative effect of welfare programs on labor supply).

153. *See* Saez, Slemrod & Giertz, *supra* note 150, at 3–4.

to work are effective in discouraging their labor efforts.

If anything, these studies' estimates of the labor-supply effects of transfers for women speak to the likely magnitude of the costs that come with prison and the benefits of rewards. Based on the strength of their revealed preferences for being at home, imprisoning mothers evidently causes a large degree of suffering for the mother, a large dollar cost to hire replacement care for her dependents, or both.[154] Rewards on the other hand might allow some caregivers who otherwise could not afford childcare to enter the workforce, go to school, or both.[155]

To be clear, negative spillovers on third parties are not necessarily pure waste. In a technical economic sense, if a potential offender knows that his imprisonment will hurt his family, and this knowledge discourages him from committing a crime, then the harms to family are not wasted because they contribute to deterrence, a socially desirable outcome. Obviously, that rationale would be very difficult to accept for retributivists or mixed efficiency-retributive theorists: justice usually prohibits intentional injury to innocent people in order to avenge harms to other innocents.[156]

Hurting innocent third parties is also bad economics. For one, it is likely that defendants will not fully internalize the suffering of third parties. Parents do care deeply for their children, and spouses for their partners, but not necessarily one hundred percent as much as they care for themselves. Certainly we should not expect defendants to fully "internalize" the third-party harms to neighbors, employers, and the local economy. Any injuries that defendants do not feel themselves, and so do not contribute to deterrence, would remain deadweight loss.

Secondly, accounting for third-party harms in sentencing can lead to dangerous perverse incentives. An economically rational law enforcement authority would likely impose lower sentences in the presence of third-party harms that were fully internalized by a defendant.[157] But knowing this, potential offenders who are aware that their own sentence would also damage the community (and are more indifferent to that fact than the average defendant) may feel more free to commit crime. [158]

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154. It is likely the same is true of society's growing share of care-providing fathers, but data so far don't show that convincingly.

155. Rocio Sanchez-Mangas & Virginia Sanchez-Marcos, *Balancing family and work: The effect of cash benefits for working mothers*, 15 LABOUR ECON. 1127, 1138–41 (2008); *see* Ghazala Naz, *The impact of cash-benefit reform on parents' labour force participation*, 17 J. POPULATION ECON. 369, 370, 380 (2004) (reporting that reduction in net subsidies for child care reduced womens' workforce participation, and summarizing similar earlier findings); *cf.* Anna Aizer, Shari Eli, Joseph Ferrie & Adriana Lleras-Muney, *The Long-Run Impact of Cash Transfers to Poor Families*, 106 AM. ECON. REV. 935, 967–69 (2016).

156. Darryl K. Brown, *Third-Party Interests in Criminal Law*, 80 TEX. L. REV. 1383, 1397–98 (2002); Paul Butler, *Much Respect: Toward a Hip-Hop Theory of Punishment*, 56 STAN. L. REV. 983, 1006 (2004); *see* DAN MARKEL, JENNIFER M. COLLINS & ETHAN J. LEIB, PRIVILEGE OR PUNISH: CRIMINAL JUSTICE AND THE CHALLENGE OF FAMILY TIES 96 (2009) (describing a deontological approach to criminal law burdens on families).

157. *See, e.g.*, John R. Lott, Jr., *Do We Punish High Income Criminals Too Heavily?*, 30 ECON. INQUIRY 583, 584 (1992).

158. For a formal model, see Brian Galle & Murat C. Mungan, *Optimal Enforcement with Heterogeneous Private Costs of Punishment* 4–8 (George Mason Law & Econ., Research Paper No. 19-11, 2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3380273 [https://perma.cc/QHA3-P26D].

Brandon Garrett dubs this phenomenon the "too big to jail" problem.[159] Accounting for social ties and other third-party harms can also introduce uncertainty and racial and wealth disparities into the justice system.[160]

But setting aside the occasional tax-evading billionaire, few potential offenders are too big to reward. That is, rewards allow us to sidestep all the gamesmanship and complications that accounting for third-party harms introduces into the sentencing process. This alone would be a strong factor in their favor. Admittedly, some potential offenders, such as megacorporations, might be so wealthy that they are difficult to entice with rewards society can afford.[161] But often even these entities place critical information or key decisions in the hands of individuals, such as mid-level managers, who are far easier to sway.[162] That fact is the keystone of proposals to police anti-trust offenses with bounties for firm whistleblowers.[163]

III. REWARDS ELIMINATE THE CRIMINOGENIC EFFECTS OF PRISON

Another major benefit of rewards is that they eliminate and, in some cases, even reverse the tendency of prison to create more crime. Some of the "criminogenic" impacts of imprisonment are likely familiar even to inexpert readers: prisons are dangerous places where some inmates make personal connections or develop "skills" that tend to contribute to more crime, both through gang membership and other avenues. Just about any incentive that keeps offenders away from prison could mitigate these problems. Another major contributor to new crime, though, is what economists might call the "income effect" of incarceration. Here, rewards uniquely flip the impact of prison, offering greater crime prevention per dollar by not only avoiding prison's unwanted effect but creating a distinctive benefit. We'll begin there.

A. Income and Substitution Effects

In the economic analysis of incentive design, government policies typically change individuals' behavior through a combination of "income" and "substitution"

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159. BRANDON L. GARRETT, TOO BIG TO JAIL: HOW PROSECUTORS COMPROMISE WITH CORPORATIONS 1–2 (2014).

160. *See* Brown, *supra* note 156, at 1401–02 (noting that third-party effects disproportionately protect white-collar defendants).

161. *Cf.* Galle, *supra* note 18, at 819 n.115 (observing that small rewards usually have more impact on poorer households).

162. This assumes that firms cannot contract to perfectly align the incentives of owners with managers, but that is, to say the least, an uncontroversial assumption. *See* Eugene F. Fama & Michael C. Jensen, *Separation of Ownership and Control*, 26 J.L. & ECON. 301, 312–15 (1983).

163. *E.g.*, LOUIS KAPLOW, COMPETITION POLICY AND PRICE FIXING 373 n.15 (2013); Cécile Aubert, Patrick Rey & William E. Kovacic, *The Impact of Leniency and Whistle-Blowing Programs on Cartels*, 24 INT'L J. INDUS. ORG. 1241, 1252–54 (2006). For some cautionary notes, such as the observation that paying bounties may crowd out intrinsic motivations, see David Freeman Engstrom, *Whither Whistleblowing? Bounty Regimes, Regulatory Context, and the Challenge of Optimal Design*, 15 THEORETICAL INQUIRIES L. 605, 622–29 (2014).

effects.[164] A substitution effect is a difference in relative price: when apples are cheaper than oranges, all else equal, we put more apples in the shopping cart.[165] Income effects represent the idea that our preferences change when our budget changes: Richie buys products with famous labels, while Po purchases the store brand.[166]

Imprisonment works through substitution effects.[167] A rational actor would commit crimes when the benefit of crime exceeds the expected costs. By choosing illegal work, an individual likely gives up time spent on legal work. As a result, higher legal wages and more work opportunities discourage crime.[168] When work opportunities are scarce or low value, illegal work is more appealing, and imprisonment works to tip the balance back toward staying legit.

It's a familiar point in the literature that rewards and penalties generally have similar substitution effects.[169] It doesn't matter if oranges are on sale, or if apples are marked up; either way, if oranges are relatively cheaper, we'll likely buy more of them. Similarly, a reward can be designed to have the same substitution effects as prison. Suppose an offender would pay fifty thousand dollars to avoid her likely sentence of imprisonment. Committing an illegal act makes her that much worse off. Now suppose instead that the government offers her a fifty-thousand-dollar payment, but which she cannot receive if she commits an offense. Either way, offending will cause a loss of fifty thousand dollars (less any benefits from committing the offense, of course).[170]

The income effects of prison work against its substitution effects.[171] Essentially, incarceration makes the offender poorer, and crime is more appealing the poorer one is.[172] Economic crimes, in particular, are crimes of desperation.[173] There is considerable evidence that even violent crimes are correlated with poverty and social dislocation, though this may be partly explained by the fact that the category of

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164. GRUBER, *supra* note 116, at 35–37.

165. *Id.* at 36. Of course, this analysis ignores the fact that oranges are juicy and delicious while apples are doctor-repelling, worm-harboring, Snow White-bespelling trash.

166. This pattern has been shown empirically. *E.g.*, Jean-Pierre Dubé, Günter J. Hitsch & Peter E. Rossi, *Income and Wealth Effects on Private-Label Demand: Evidence from the Great Recession*, 37 MARKETING SCI. 22, 23–24 (2018).

167. Chalfin & McCrary, *supra* note 29, at 7–8; Meares, Katyal & Kahan, *supra* note 69, at 1173–74.

168. Meares, Katyal & Kahan, *supra* note 69, at 1187; *see* Draca & Machin, *supra* note 64, at 390, 395 (describing substitution effects of higher lawful wages on crime).

169. Galle, *supra* note 18, at 808.

170. Ehrlich, *supra* note 26, at 47. Again, for ease of explanation, the example omits important complications that might result from diminishing marginal utility of wealth or from other forms of loss aversion. Galle, *supra* note 18, at 816–19.

171. *Cf.* Galle, *supra* note 18, at 817 (arguing that carrots are preferable for inferior goods). For general analysis of contending income and substitution effects, see THOMAS STERNER, POLICY INSTRUMENTS FOR ENVIRONMENTAL AND NATURAL RESOURCES MANAGEMENT 167 (2002).

172. Ehrlich, *supra* note 26, at 53; *see* PFAFF, *supra* note 16, at 120 (noting evidence that prison reduces lifetime wealth).

173. CORMAC Ó GRÁDA, FAMINE: A SHORT HISTORY 52–56 (2009).

"violent" crime includes robbery and burglary.[174]

One way to think about this point is that we all have a "target" amount of lifetime earnings we want to have available to meet our current needs and be ready for retirement. Most offenders lose money while in jail and also suffer a steep drop in earning capacity once they exit.[175] Part of this drop is due to legal and practical obstacles to hiring for individuals with a criminal record,[176] but some is due directly to imprisonment itself. For instance, being behind bars contributes to "human capital" erosion, as we forget what we've learned, and our useful knowledge is getting out of date.[177] Thus, being imprisoned makes it much more likely we'll fall short of our target lifetime earnings—perhaps desperately short. With few other ways to reach our target, we commit more crime. Then we are caught, and the cycle repeats again.

Rewards upend this unfortunate story. Like several other potential alternatives to incarceration, rewards would avoid the lost wages and depreciated human capital that accompany jail time. Even better, cash or other valuable transfers help potential offenders to make ends meet, bringing them further from the threshold of desperation that would make crime seem like a rational option. In a formal model of optimal deterrence, the income effect can be shown to reduce the size of the incentive government needs to offer to achieve its optimum.[178] Further, in communities most impacted by crime, systematic rewards might help to reverse the cycle of poverty, crime, and social resignation to the fact of criminality that itself may well contribute to crime.[179]

Alaska's Permanent Fund Dividend offers some recent evidence on the importance of income effects. As Dorsett finds, the Fund was more effective at reducing crime before 1989, when the legislature added an exclusion for individuals in prison.[180] Seen only from a substitution effect perspective, this is a puzzling result:

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174. Allegra M. McLeod, *Beyond the Carceral State*, 95 Tex. L. Rev. 651, 683–84 (2017).

175. Western & Pettit, *supra* note 2, at 13 (finding forty percent drop in average earnings); *see* Draca & Machin, *supra* note 64, at 395–96 (summarizing evidence of effect of incarceration on earnings). The impact is especially dramatic for younger offenders, where prison often interrupts high school completion. Anna Aizer & Joseph J. Doyle, Jr., *Juvenile Incarceration, Human Capital, and Future Crime: Evidence from Randomly Assigned Judges*, 130 Q.J. Econ. 759, 763 (2015).

176. Western & Pettit, *supra* note 2, at 13–14.

177. Charles E. Loeffler, *Does Imprisonment Alter the Life Course? Evidence on Crime and Employment from a Natural Experiment*, 51 Criminology 137, *passim* (2013); Anke Ramakers, Robert Apel, Paul Nieuwvbeerta, Anja Dirkzwager & Johan Van Wilsem, *Imprisonment Length and Post-Prison Prospects*, 52 Criminology 399, *passim* (2014); *cf.* Randi Hjalmarsson, *Criminal Justice Involvement and High School Completion*, 63 J. Urb. Econ. 613, *passim* (2008) (finding that longer prison sentences increase school drop-out rates). *But see* Jeffrey R. Kling, *Incarceration Length, Employment and Earnings*, 96 Am. Econ. Rev. 863, *passim* (2006) (finding no marginal loss of post-prison earnings for longer sentences, in setting where sentence length resembles random assignment).

178. See Brian Galle, *Carrots, Sticks, and Salience*, 67 Tax L. Rev. 53, 60–62, 86–89 (2013), for more discussion and a graphical illustration.

179. Fagan & Meares, *supra* note 42, at 202–12; Western & Pettit, *supra* note 2, at 18.

180. Dorsett, *supra* note 25, at 31–32.

why is there more crime when committing crime reduces Dividend Fund income?[181] Income effects are a possible answer. The enriching impact of the Fund payments is present before 1989 but not afterwards, and the large difference in income between the two periods turns out to be more important than the substitution effect.

Rewards can also combine income and substitution effects. If the returns to legal employment are higher, crime becomes less appealing through both paths: the individual is better off, and she would be giving up more to engage in crime.[182] Not surprisingly, then, there is now considerable evidence that stronger economic conditions reduce crime.[183]

Admittedly, there are intermediate reform options that move our current criminal justice system in the direction of rewards while retaining a major role for imprisonment. For example, states and the federal government could make major strides toward removing the many legal barriers to employment for those with criminal records.[184] Similarly, we could greatly expand mechanisms for sealing criminal histories, especially for youthful offenders who stand to lose the most lifetime income.[185] All these reforms would mitigate, but likely not eliminate, the economic costs of incarceration.

B. Prison Creates Crime

Avoiding imprisonment through the use of rewards would also sidestep a common and perverse effect of incarceration: it generates more crime. The criminogenic potential of prisons has been well canvassed by prior literature,[186] so my treatment here will be cursory.

First, prisons give rise to inmate-on-inmate violence.[187] The U.S. penal system, in particular, places large numbers of individuals in very close proximity, under highly resource-constrained circumstances. In some instances, inmates are also subject to psychological stresses, such as periods of solitary confinement, that could well be

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181. *See* Fleischer & Hemel, *supra* note 22, at 1224–25 (arguing that a universal basic income that excluded offenders would likely reduce crime).

182. *Cf.* Chalfin & McCrary, *supra* note 29, at 32 (explaining that job supports discourage crime through substitution effects).

183. Chalfin & McCrary, *supra* note 29, at 33–37; Draca & Machin, *supra* note 64, at 393–95, 399; Mirko Dracan, Theodore Koutmerides & Stephen Machin, *The Changing Returns to Crime: Do Criminals Respond to Prices?*, 86 REV. ECON. STUD. 1228, 1254 (2019); Ming-Jen Lin, *Does Unemployment Increase Crime? Evidence from U.S. Data 1974–2000*, 43 J. HUM. RESOURCES 413, *passim* (2008).

184. *See* Issa Kohler-Hausmann, *Managerial Justice and Mass Misdemeanors*, 66 STAN. L. REV. 611, 684–92 (2014).

185. Murat C. Mungan, *Reducing Crime Through Expungements*, 137 J. ECON. BEHAV. & ORG. 398, 402 (2017); *see* Amy Shlosberg, Evan J. Mandery, Valerie West, & Bennett Callaghan, *Expungements and Post-Exoneration Offending*, 104 J. CRIM. L. & CRIMINOLOGY 353, 356–62 (2014) (describing "formidable" barriers to expungement in most states).

186. *See, e.g.*, BARKOW, *supra* note 16, at 61–72; Epperson & Pettus-Davis, *supra* note 137, at 7–8; Fagan & Meares, *supra* note 42, at 176.

187. PFAFF, *supra* note 16, at 119–20.

described as torture.[188] These are the classic ingredients for violent conflict.[189] In addition, for well-known political economy reasons, U.S. governments have not been willing to commit the resources necessary to ensure that inmates are safe from one another.[190]

Prison inmates also build social networks that tend to lead to more crime.[191] Cut off from friends and family, and often forced to depend on in-prison networks for personal safety and other resources, many incarcerated individuals naturally form social bonds with other prisoners. While, again, proof of the causal impact of prison is difficult, a number of recent quasi-random "experiments" support the inference that an inmate's assignment to facilities with more individuals who have already engaged in burglary, violence, and drug use indeed causes, through peer effects, increased burglary, violence, and drug use upon release.[192]

At the same time, widespread imprisonment erodes the social and economic conditions that help to prevent crime. As we've seen, prison can hollow out communities and dissolve families. But these are the resources—social bonds and economic livelihood—that tend to tip the potential offender's personal calculus away from offending.[193]

It might be argued that there are alternative policies we could embark on, other than rewards, that would trim or eliminate the advantages that rewards offer. For example, advocates have recommended safer prisons, or Scandinavian-model institutions with relatively few individuals per facility, as potential solutions to the criminogenesis problem.[194] Advocates have not thus far found solutions to the American political unwillingness to spend money on these ideas.

While I am not a political consultant, and so certainly cannot offer any strong claim that rewards would prove more politically viable than these (so-far) failed alternatives, I note that rewards may differ in a pair of key respects. Both are ultimately about budgets. First, hiring more prison guards or otherwise making prison safer would likely be an additional public expense, over and above current

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188. Jules Lobel, *Prolonged Solitary Confinement and the Constitution*, 11 U. Pa. J. Const. L. 115, 117–18 (2008).

189. *Cf.* Amy E. Lerman, *The People Prisons Make: Effects of Incarceration on Criminal Psychology*, *in* Do Prisons Make Us Safer? The Benefits and Costs of the Prison Boom 151, 164–67 (Steven Raphael & Michael A. Stoll eds., 2009) (finding that high-security prisons increase violent attitudes among formerly nonviolent offenders). *See generally* James M. Byrne & Don Hummer, *Myths and Realities of Prison Violence: A Review of the Evidence*, 2 Victims & Offenders 77 (2008).

190. John DeIulio, Jr., Governing Prisons: A Comparative Study of Correctional Management 253 (1987).

191. Brendan D. Dooley, Alan Seals & David Skarbek, *The Effects of Prison Gang Membership on Recidivism*, 42 J. Crim. Justice 267, 268 (2014); Draca & Machin, *supra* note 64, at 398–99; Megan Stevenson, *Breaking Bad: Mechanisms of Social Influence and the Path to Criminality in Juvenile Jails*, 99 Rev. Econ. & Stats. 824, 825–37 (2017).

192. Patrick Bayer, Randi Hjalmarsson & David Pozen, *Building Criminal Capital Behind Bars: Peer Effects in Juvenile Corrections*, 124 Q.J. Econ. 105, 125–37 (2009); Dooley, Seals & Skarbek, *supra* note 191, at 268–73; Stevenson, *supra* note 191, at 825–37.

193. Bocanegra, *supra* note 102, at 120; Fagan & Meares, *supra* note 42, at 182–212.

194. Mirko Bagaric, Dan Hunter & Gabrielle Wolf, *Technological Incarceration and the End of the Prison Crisis*, 108 J. Crim. L. & Criminology 73, 127–30 (2017).

costs.[195] In contrast, rewards may well be budget neutral as compared to current policy, or even money saving: the key factor will be whether rewards achieve more or less crime prevention per dollar. We'll continue to weigh that question over the remainder of the Article.

The other difference is a technical one about the economics of deterrence, although it is a technical point that most people already have strong intuitions about. If we make prison safer, less torturous, less isolating, and so on, then a year of prison won't be as psychologically debilitating. Arguably, that would reduce the deterrent effect of prison.[196] To maintain current deterrence levels, the technical claim (and the popular intuition about it) might suggest that we would have to either impose longer sentences or detect and capture more offenders. Both of these would themselves be costly.[197] In intuitive terms, we have to be tough on prisoners so that prison deters. I am skeptical about the premises of this claim; that is, for the reasons sketched in Part IV, below, I doubt that prison conditions meaningfully affect deterrence. But likely many voters believe to the contrary.

Even if improving prison conditions does suffer from this problem, rewards need not. Again, the government can adjust its reward so that the combined income and substitution effects replicate the incentive effect of any prison sentence. Whether the required reward would cost more or less than the current cost of imprisonment is an empirical question. As I've just suggested, my prognostication is that rewards are quite competitive with prison on a cost basis.

IV. EX ANTE INCENTIVES

Another major advantage rewards may offer over incarceration is that they do not depend to nearly the same degree on human foresight. We saw in Part II evidence that extended terms of imprisonment provide little additional marginal deterrence, making them no more effective than shorter terms at preventing crime. That outcome is puzzling from a "rational choice" perspective: there is no question that three years in prison is quite a bit worse than two, even if only because of lost earnings. It makes a lot more sense, though, when considered together with the overwhelming evidence that humans are bad at thinking about and preparing for the future. Aesop knew it, and so do college students cramming for exams at the last minute. In this Section, I therefore consider how to design criminal law for short-sighted humans.

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195. Maria Laura Alzúa, Catherine Rodriguez & Edgar Villa, *The Quality of Life in Prisons*, *in* THE ECONOMICS OF CRIME: LESSONS FOR AND FROM LATIN AMERICA 239, 240–41 (Rafael Di Tella, Sebastian Edwards & Ernesto Schargrodsky eds., 2010).

196. *See* Lawrence Katz, Steven D. Levitt & Ellen Shustorovich, *Prison Conditions, Capital Punishment, and Deterrence*, 5 AM. L. & ECON. REV. 318, 319 (2003) (reporting that a proxy for prison conditions is negatively correlated with crime rates).

197. *See* Polinsky & Shavell, *supra* note 117, at 417–18 (describing cost tradeoffs between prison and enforcement).

A. Prison's Ex Post Problem

First, there is overwhelming evidence that many of us act as though we value the future far less than the present.[198] Behavioral economists have a lot of fancy terms for that phenomenon: "hyperbolic discounting" and "present bias" and "time-inconsistent preferences," among others.[199] While these vary in some of their technical details, they have similar implications: we are unwilling to give up a dollar today, even if it would give us much more than a dollar tomorrow.[200] We don't save enough for retirement.[201] We fail to insure against future losses.[202] We borrow more than we can pay back.[203] We don't go to the gym.[204] Closest to home, lack of impulse control and discounting of future consequences predict a variety of criminal behaviors.[205]

As other scholars have thoroughly explored, present bias deeply undermines the economic foundations of imprisonment.[206] The whole concept of deterrence relies on

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198. *See, e.g.*, Shane Frederick, George Loewenstein & Ted O'Donoghue, *Time Discounting and Time Preference: A Critical Review*, *in* ADVANCES IN BEHAVIORAL ECONOMICS 162, 172–78, 201–07 (Colin F. Camerer, George Loewenstein & Matthew Rabin eds., 2004).

199. *See id.* (explaining terms, but not calling them "fancy").

200. Some readers may be familiar with the phrase "time value of money." This is a concept from project budgeting that measures the opportunity cost of money. In deciding whether to invest in any one project that pays off in the future, I should decide whether the project will pay off returns that would exceed what I could get if I invested in some other, safer, investment instead. For instance, I could put the money in government bonds. This safe payoff is the "time value" of my investment.

We can use time value to compare present costs directly to future payoffs by turning it into a "discount rate." A discount rate calculation determines how much money $Y I would have, given a present investment $X, if I invested in the safe option until period T. Again, I should only choose investments whose payoff in period T is larger than $X plus the safe investment. Calculating a "discounted present value" of $Y allows me to compare $X and $Y directly, and to choose the project if its payoff is larger than $Y. That is how a rational planner would prepare for the future. A "hyperbolic" discounter acts as though she has some extra payoff from current expenditures, so that $Y is discounted by more than would be implied by the safe investment return.

201. Brigitte C. Madrian, *Applying Insights from Behavioral Economics to Policy Design*, 6 ANN. REV. ECON. 663, 668–69 (2014).

202. Howard Kunreuther & Mark Pauly, *Rules Rather than Discretion: Lessons from Hurricane Katrina*, 33 J. RISK & UNCERTAINTY 101, 106–08 (2006).

203. Frederick, Loewenstein & O'Donoghue, *supra* note 198, at 201–07.

204. Stefano DellaVigna & Ulrike Malmendier, *Paying Not To Go to the Gym*, 96 AM. ECON. REV. 694, 695–96, 713–14 (2006); Jean-Denis Garon, Alix Masse & Pierre-Carl Michaud, *Health Club Attendance, Expectations, and Self-Control*, 199 J. ECON. BEHAV. & ORG. 364, 364–73 (2015).

205. Daniel S. Nagin & Greg Pogarsky, *Time and Punishment: Delayed Consequences and Criminal Behavior*, 20 J. QUANTITATIVE CRIMINOLOGY 295, *passim* (2004); *see* Geoffrey Fain Williams, *Property Crime: Investigating Career Patterns and Earnings*, 119 J. ECON. BEHAV. & ORG. 124, 125–26, 135 (2015).

206. *See* MARGERY FRY, ARMS OF THE LAW 83 (1951); Chalfin & McCrary, *supra* note 29, at 9; Robinson & Darley, *supra* note 36, at 194; Manuel Utset, *Hyperbolic Criminals and*

the idea that an individual will anticipate the future consequences of her actions. If individuals are largely indifferent to those consequences, deterrence will do little to motivate them. Prison becomes mostly deadweight loss: pain we inflict, at great monetary cost, without any social benefit. To be sure, individuals might care about their future selves, but rather less than they care about their present. In that case, prison does deter but only in a highly cost-ineffective way so that it's only *mostly* deadweight loss.

Other commentators have also tentatively offered ways to tweak the prison system so that it is less vulnerable to present bias. One possibility that several authors have mentioned is to impose radically shorter sentences.[207] Obviously, present-biased actors care much more about the jail time that is happening now or close to now than they do about the jail time that would happen ten years from now.[208] Keeping sentences short helps to ensure that the punishments imposed occur at a time (close to now) that defendants care about. Of course, if one assumes that sentences imposed under present law provide the optimal amount of deterrence for rational actors, shortening sentences dramatically would increase crime. So these proposals generally also suggest increasing policing efforts to catch a larger share of offenders, thus maintaining something like the same expected punishment.[209]

There is a lot to like about these ideas, but they face a daunting math problem.[210] Suppose we wanted to shorten sentences from their average two- to three-year terms for most offenses to about six months. If we are going to maintain the same expected punishment for an offense that currently carries an average thirty-month sentence, we will have to catch and convict *five times* as many offenders.[211] Though a large share of offenders are convicted once caught,[212] that level of enforcement still implies

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Repeated Time-Inconsistent Misconduct, 44 HOUSTON L. REV. 609, 657–62 (2007).

207. Nagin, *supra* note 29, at 100; *see* Miriam H. Baer*, Evaluating the Consequences of Calibrated Sentencing: A Response to Professor Kolber*, 109 COLUM. L. REV. SIDEBAR 11, 15–17 (2009).

208. *See* Utset, *supra* note 206, at 657–62.

209. Chalfin & McCrary, *supra* note 29, at 10. By "expected punishment," I mean the average sentence times the probability of detection and conviction. Polinsky and Riskind attempt to turn present bias into an argument in favor of prison, by arguing that since prison occurs closer in time to an offense than parole, prison should be preferred to parole. A. Mitchell Polinsky & Paul N. Riskind, *Deterrence and the Optimal Use of Prison, Parole, and Probation*, 62 J.L. & ECON. 347, 348–49 (2019). That may be so, but *ex ante* rewards or sentencing diversion efforts are even closer in time to the offense, making them more appealing still.

210. *Cf.* Chalfin & McCrary, *supra* note 29, at 41 (acknowledging questions about whether increased enforcement frequency is "scalable").

211. This policy would also result in inefficient over-deterrence for unbiased individuals. *See* Galle, *supra* note 178, at 95. The optimal adjustment strategy would reduce sentence length only partially, and increase detection only moderately, to balance over- with under-deterrence. *See id.* (describing approach to incentivizing when population varies in its awareness of incentive). But this approach would only mitigate, not eliminate, the waste of an ex post program. *Id.*

212. State conviction rates for felonies exceeds two-thirds on average. Brian A. Reaves, *Felony Defendants in Large Urban Counties, 2009 - Statistical Tables*, BUREAU OF JUST. STAT. (Dec. 2013), https://www.bjs.gov/content/pub/pdf/fdluc09.pdf [https://perma.cc/RM7D

a massive increase in policing and surveillance. Even if we were ready as a society to spend that kind of money, it is unlikely we would be happy with the consequences for our personal liberties.[213]

B. Ex Ante Programs and the Targeting Problem

One common alternative approach to addressing prison's ex post problem is to try to address the factors that may contribute to present bias. Parole, probation, and other sentence-diversion programs commonly include drug treatment and other mental health services.[214] It is likely that addiction and mental illness both sap our ability to make long-term plans.[215] Treatment might therefore discourage recidivism by making former inmates more sensitive to threats of future punishment.

Another notable feature of most mental health services linked to the criminal justice system is that they are only available post-conviction.[216] That is perhaps a puzzle. If rewards are effective at preventing crime, why limit them to the group of individuals who have already been convicted?

Cost is the simple answer, of course, but the more complicated rejoinder brings us back to some of the basic design principles of a regulatory regime. At a very high level of generality, most regulatory theorists prefer incentives whose value is determined after the regulated party has committed their good or bad acts—so-called ex post incentives.[217] The rewards I've been considering, in contrast, are ex ante: the regulator offers them not to those who actually do wrong but instead to a much larger group of those who present risks of harm.[218] The difficulty in ex ante incentives, and the reason other writers disfavor them, is that it's hard to know who should belong

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-TZRH]. Conviction rates for federal offenses are much higher. John Gramlich, *Only 2% of Federal Defendants Go to Trial, and Most Who Do Are Found Guilty*, PEW RES. CTR. (June 11, 2019), https://www.pewresearch.org/fact-tank/2019/06/11/only-2-of-federal-criminal -defendants-go-to-trial-and-most-who-do-are-found-guilty/ [https://perma.cc/654G-V6WA].

213.   *See* BUTLER, *supra* note 3, at 61–76, 96–97 (describing policing as instrument of social control that can produce "racial subordination and white privilege").

214.   THOMAS P. BONCZAR, BUREAU OF JUST. STAT., CHARACTERISTICS OF STATE PAROLE SUPERVISING AGENCIES 5 (2005) (rev. Mar. 2009); Mark A.R. Kleiman & Angela Hawken, *Fixing the Parole System*, 24 ISSUES SCI. & TECH. 45, 48 (2008); Jennifer L. Skeem & Sarah Manchak, *Back to the Future: From Klockars' Model of Effective Supervision to Evidence-Based Practice in Probation*, 47 J. OFFENDER REHABILITATION 220, 233–34 (2008).

215.   *See* PFAFF, *supra* note 16, at 194 (noting that impulsivity reduces potential offender's sensitivity to long-run incentives, such as threat of prison).

216.   *See* Joseph P. Morrissey, Jeffrey A. Fagan & Joseph J. Cocozza, *New Models of Collaboration Between Criminal Justice and Mental Health Systems*, 166 AM. J. PSYCH. 1211 (2009), https://doi.org/10.1176/appi.ajp.2009.09050670 [https://perma.cc/VFQ4-27JT] (noting "over-reliance" on punitive measures for dealing with mentally ill).

217.   *E.g.*, RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 490–91 (8th ed. 2011); Steven Shavell, *Corrective Taxation Versus Liability as a Solution to the Problem of Harmful Externalities*, 54 J.L. & ECON. S249, S251 (2011); Donald Wittman, *Prior Regulation vs. Post Liability: The Choice Between Input and Output Monitoring,* 6 J. LEGAL STUD. 193, 200 (1977).

218.   Brian Galle, *In Praise of Ex Ante Regulation*, 68 VAND. L. REV. 1715, 1723–24 (2015).

in the ex ante group and how big the ex ante incentive should be.[219] Ex post we can observe not just who caused an injury but also how severe the injury was, allowing us to calibrate the punishment to the crime.[220]

That is the defense most people would probably offer for why we limit mental health services mostly to post-conviction. Paying for, say, residential psychiatric care is very expensive.[221] Clinical models may predict which individuals will present the biggest risk of crime if they don't receive help, but these can never operate with certainty. If we just treated everyone with severe mental health needs, we could well spend billions without significantly reducing crime. In contrast, we might think that those who have already been convicted of one offense are unusually likely to commit another. Conviction thus arguably serves as a relatively cost-effective "targeting" or "screening" mechanism, helping us to allocate scarce mental health dollars to those where each dollar prevents the most crime.

If that is the argument for why most preventive services now are available only post-conviction, it is not a very persuasive one. To the extent that we want to rely on arrest as a way to identify risk of subsequent offending, there is no need to interpose prison between the arrest and the preventive services. As we've seen, many prevention programs divert offenders away from the criminal justice system subsequent to arrest.

It might be argued in response that using arrests to target benefits—without prison in between—creates undesirable incentives to be arrested. It's not clear that this is true as a factual matter. Some diversion programs are coercive enough to carry their own deterrent effect.[222] Further—just as some of us prefer not to save for retirement, but once we're retired wish we had money—some individuals may not recognize treatment as valuable before they've received it; think here of the painful prospect of quitting a highly addictive drug.[223] Even if the incentive point were true, using prison to "screen" for benefit delivery is enormously socially wasteful. In effect we are both paying for the benefit and also paying to make the benefit seem less appealing to potential beneficiaries.[224] Costly screens work when those who most value the benefit don't find the screening to be costly,[225] but there is no reason to think that is the case for prison and preventive benefits.

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219. *See* Shavell, *supra* note 217, at S255-56.

220. *Id.*

221. Erin Grinshteyn & Jeanne Wendel, *Behavioral Health Conditions: Direct Treatment Costs and Indirect Social Costs*, *in* QUALITY IMPROVEMENT IN BEHAVIORAL HEALTH 9, 15–16 (William O'Donohue & Alexandros Maragakis eds., 2016).

222. McLeod, *supra* note 106, at 1663.

223. *See* Neil D. Weinstein & William M. Klein, *Resistance of Personal Risk Perceptions to Debiasing Interventions*, 14 HEALTH PSYCH. 132, 139 (1995) (reporting evidence that humans resist evidence that would require them to do things they don't want to do); Kunreuther & Pauly, *supra* note 202, at 105–06 (explaining why households fail to insure against disasters). *See generally* Ted O'Donoghue & Matthew Rabin, *Choice and Procrastination*, 116 Q.J. ECON. 121 (2001) (developing a model of "partially naïve" households).

224. *See* David A. Super, *Offering an Invisible Hand: The Rise of the Personal Choice Model for Rationing Public Benefits*, 113 YALE L.J. 815, 851–52 (2004) (making this point about hassle screens generally).

225. Jonathan S. Masur, *Costly Screens and Patent Examination*, 2 J. LEGAL ANALYSIS

In any event, we don't need arrests to target benefits. To begin with, one simple step the government can do instead is offer rewards of several different values. As I've explained elsewhere, targeting is a problem of matching, and the costs of mismatching get larger exponentially with the size of the mismatch.[226] With some computer-generated simulations, I've shown that even very roughly matching with three categories can capture most of the social gains that would be achieved through perfect matching.[227] That is, if government has three categories of rewards—big, middle, and small—and can do a reasonably good job sorting those at risk of crime into the three categories, it can make matching vastly more cost-effective than with just a single category.[228]

Technology and data science can make important contributions as well. To implement its sorting project, the government can draw on observable information and past results to generate predictions about which individuals are at highest risk. This is not science fiction. A robust literature has identified many of the individual and community risk factors for crime.[229] Virginia has used algorithmic risk assessment in sentencing for more than two decades.[230] More recent work by a team of economists on what they dub the "Opportunity Atlas" has been able to measure the likelihood that an individual will be incarcerated on a given date in the future at the block-by-block level.[231] By studying relocated families, they show there is a strong likelihood this relationship is causal, i.e., that neighborhoods cause outcomes.[232] But that distinction is not important for targeting of rewards programs: either way, residing on a block where forty-seven percent of black men will serve time can serve as a powerful indicator that an individual is a good investment for preventive spending.[233]

To be sure, the problems of Big Data and algorithmic risk assessment are by now well known.[234] Commentators complain rightly that algorithmic risk assessment can

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687, 688–91 (2010).

226. Galle, *supra* note 218, at 1725–29.

227. *Id.* at 1729–34.

228. *Id.* at 1734.

229. Carrie Pettus-Davis, Matthew W. Epperson & Annie Grief, *Reforming Civil Disability Policy*, *in* SMART DECARCERATION: ACHIEVING CRIMINAL JUSTICE TRANSFORMATION IN THE 21ST CENTURY 160, 167 (Matthew W. Epperson & Carrie Pettus-Davis eds., 2017) (identifying seven leading risk factors, including schooling and work history, impulsive behavior, drug dependency, and family structure); Julian Adler, Sarah Picard-Fritsche, Michael Rempel & Jennifer A. Tallon, *Advancing the Science and Practice of Risk Assessment*, *in* SMART DECARCERATION, *supra* note 55, at 210, 211–12.

230. Megan T. Stevenson & Jennifer Doleac, Algorithmic Risk Assessment in the Hands of Humans 8–10 (Nov. 18, 2019) (unpublished manuscript) (available at https://papers.ssrn .com/sol3/papers.cfm?abstract_id=3489440 [https://perma.cc/2CZU-82XY]).

231. Raj Chetty, John N. Friedman, Nathaniel Hendren, Maggie R. Jones & Sonya R. Porter, *The Opportunity Atlas: Mapping the Childhood Roots of Social Mobility* 20–23, 45 (Nat'l Bureau of Econ. Rsch., Working Paper No. 25147, 2018), http://www.nber.org/papers /w25147 [https://perma.cc/7UST-9GNB].

232. *Id.* at 35–43.

233. *See id.* at 20, 35 (arguing that geography can serve as effective "tag" for targeting social resources).

234. *See* CATHY O'NEIL, WEAPONS OF MATH DESTRUCTION: HOW BIG DATA INCREASES

compound societal racism and classism, offering projections of who should be detained that would tend to most heavily burden communities of color.[235]

Remarkably, by using algorithmic risk assessment to assign rewards instead of punishments, we make the algorithm's own biases a potential source of corrective social justice. That is, let's take it as given that algorithms tend to overpredict crime risk for African Americans. In my proposal, these same algorithms would be used to determine who gets the largest rewards. So biased algorithms would tend to systematically favor granting rewards to minority communities. But admittedly not all rewards programs can be targeted by an algorithm. Others, such as "street diversion" by police officers, still pose the risk that they will reflect human biases and emotions.[236]

Mistargeting is still a concern when granting rewards—rewards cost money, which requires socially costly tax revenue—but it is a much smaller concern when the result is to over-reward the poorest and the socially neglected. David Super has explained a similar dynamic with the allocation of social safety-net spending. As Super notes, even if we mistarget awards a little bit, we are still giving money to those who need it much more desperately than the average household.[237]

Mistargeting can also be economically efficient to the extent that it "smoothes" what would otherwise have been a sharp legal distinction between those eligible for benefits and those who are not. Some programs phase out their benefits slowly, so that there is not much difference between those who just qualify and those who just miss qualifying.[238] But others have dramatic differences in benefits tied to small practical differences. A household whose child turns seventeen on December 31 gets a child tax credit of several thousand dollars; another whose child turns seventeen on January 2 gets nothing.[239] These differences are inequitable, and often they produce strong and unwanted behavioral distortions (in an era where delivery can be induced, more children are born December 31 than January 2).[240] Many criminal justice

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INEQUALITY AND THREATENS DEMOCRACY 27 (2016); Cecelia Klingele, *The Promise and Perils of Evidence-Based Corrections*, 91 NOTRE DAME L. REV. 537, 577–78 (2015); Stevenson & Doleac, *supra* note 230, at 29–30 (finding that algorithmic sentence recommendations in Virginia increased racial disparities among judges who made most extensive use of the algorithm).

235. *See* sources cited *supra* note 234.

236. Fan, *supra* note 111, at 190–93; *see* Fedders, *supra* note 111, at 443–46. Professor Fan notes some techniques for reducing bias in these environments. Fan, *supra* note 111, at 196–205.

237. *See* David A. Super, *The Quiet "Welfare" Revolution: Resurrecting the Food Stamp Program in the Wake of the 1996 Welfare Law*, 79 N.Y.U. L. REV. 1271, 1324–41 (2004); *see also* KRISTIN KOMIVES, VIVIAN FOSTER, JONATHAN HALPBERN & QUENTIN WODON, WORLD BANK, WATER, ELECTRICITY, AND THE POOR: WHO BENEFITS FROM UTILITY SUBSIDIES? 5, 153 (2005) (arguing that non-prosecution of water diversion is a progressive policy on net).

238. Adam J. Kolber, *The Bumpiness of Criminal Law*, 67 ALA. L. REV. 855, 857 (2016); Edward Fox & Jacob Goldin, *Sharp Lines and Sliding Scales in Tax Law*, TAX L. REV. (forthcoming 2020) (manuscript at 8–12) (available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3339656 [https://perma.cc/BSG2-G8E9]).

239. 26 U.S.C. §§ 24, 152.

240. Stacy Dickert-Conlin & Amitabh Chandra, *Taxes and the Timing of Births*, 107 J. POL. ECON. 161, 172–73 (1999).

rewards will probably be hard to phase out: either an individual gets residential mental health treatment, or they don't.[241] Mistargeting blurs the resulting sharp boundaries, diminishing the difference between those who would qualify under a perfectly administered system and those who wouldn't.[242]

C. Behaviorally Informed Ex Ante Policy

Whether or not we see targeting as a serious obstacle for ex ante crime prevention, there are some important theoretical advantages to ex ante policy making. Some of these derive from the fact that up-front awards allows potential offenders to exchange a large, risky outcome (committing a crime, being detected and convicted) for a small, relatively certain one (being paid to refrain from situations that increase risk of crime). Other benefits build on what behavioral economics has taught us about how to design incentives.

Let's start with the benefits of swapping big risks for small certainties. Economists recognize that prison is an inefficient way to incentivize humans because it forces people to bear risks.[243] Humans are typically "risk averse": the welfare or "utility" gains from winning a 50/50 bet are not as big as the costs of losing.[244] If your bank account stands at $50,000, do you want to place a $49,999 bet with even odds? The criminal justice system forces many people to play just this kind of undesirable lottery. Reporting and "clearance" rates for most crimes are low, and to account for this we make the resulting penalty much higher than it would need to be in an environment where detection and conviction was more likely.[245] Because it imposes risk, the total suffering this system inflicts is much larger than one with identical total punishments but where all the punishments were small and certain.[246]

Lowering the stakes each individual faces also efficiently reduces the variance of the government's incentive. Murat Mungan and I have shown that regulatory systems (including the criminal justice system, of course) go wrong when government can't

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241. One available intermediate position could be requiring co-payments for higher-income individuals, but for most of the relevant population, co-pays would have to be such a tiny fraction of the total cost that it would probably be a net money-loser to calculate and collect them. *Cf.* Samantha Artiga, Petry Ubri & Julia Zur, *The Effects of Premiums and Cost-Sharing on Low-Income Populations: Updated Review of Research Findings*, KAISER FAM. FOUND. 4–5 (June 2017), http://files.kff.org/attachment/Issue-Brief-The-Effects-of -Premiums-and-Cost-Sharing-on-Low-Income-Populations [https://perma.cc/XSC3-ZJV2] (summarizing studies finding that requiring Medicaid co-pays raised little money and prevented very low-income families from accessing care).

242. *See* Alex Raskolnikov, *Probabilistic Compliance*, 34 YALE J. ON REG. 491, 509–510 (2017).

243. Polinsky & Shavell, *supra* note 117, at 17–18, 37–38.

244. *See* GRUBER, *supra* note 116, at 322–25.

245. *See* PFAFF, *supra* note 16, at 72 (discussing trends in clearance rates and charging practices); *see also Crime in the United States, 2018: Offenses Cleared*, FED. BUREAU OF INVESTIGATION (2019), https://ucr.fbi.gov/crime-in-the-u.s/2018/crime-in-the-u.s.-2018 /topic-pages/clearances.pdf [https://perma.cc/SJM3-D95C] (reporting clearance rates by crime category).

246. *See* Ehrlich, *supra* note 26, at 52–53; Nuno Garoupa, *The Theory of Optimal Law Enforcement*, 11 J. ECON. SURVS. 267, 279 (1997).

predict perfectly how much suffering (or benefit) its punishments (or rewards, respectively) will cause any given individual.[247] Even if the regulator knows on average how much deterrence a year in prison offers, some defendants will subjectively be deterred more or less. This means that a one-year sentence will over-deter some defendants while under-deterring others. As we've explained, smaller and more frequent incentives reduce this problem.[248] The smaller the incentive, the less of a difference there is between those who value it more than average and those who value it less. And, once more, the social cost of errors grows exponentially with the size of the government's mistake.

Ex ante incentives probably also reduce variance in a potential offender's subjective valuation just by being easier to understand. Even if there were no "hyperbolic discounting," some people would likely mistake the risks of future imprisonment because they don't know its real likelihood and have never experienced it.[249] These problems are greatly minimized if instead we use an incentive most people understand—money, say—and offer it with certainty to everyone who qualifies.[250]

Let's now also glance at some design lessons behavioral economics offers for regulating in the face of present bias. By definition, the present-biased actor much prefers immediate incentives to those that come later. This might look like a disadvantage for rewards. The absence of crime isn't something that happens just once: the individual has to make it happen every day. Regulators don't necessarily have to pay rewards every day; we could offer a large payment in the future instead—for instance, adding bonus Social Security payments to those without any felony convictions. But, of course, these long-run incentives won't likely be very motivating for individuals who are present biased.

Commitment devices are now a standard solution to this problem.[251] The commitment device is like regulatory martial arts: it uses the individual's bias to help overcome that bias.[252] Default retirement savings are the classic example.[253] We think many people don't save for retirement because they find the present annoyance of filling out the paperwork to be more important than having money years later. To the extent defaults work, they likely do so because the people who find paperwork annoying are the same people who won't be bothered to opt out of the default.[254] So

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247. Brian Galle & Murat Mungan, Predictable Punishments, 10 U.C. IRVINE L. REV. 337, 350–58 (2020).

248. *Id.* at 364–67.

249. *See* Lucian Arye Bebchuk & Louis Kaplow, *Optimal Sanctions When Individuals Are Imperfectly Informed About the Probability of Apprehension*, 21 J. LEGAL STUD. 365, 366–67 (1992).

250. Galle & Mungan, *supra* note 247, at 40–41.

251. *See* Isabelle Brocas, Juan D. Carillo & Mathias Dewatripont, *Commitment Devices Under Self-Control Problems: An Overview*, *in* 2 THE PSYCHOLOGY OF ECONOMIC DECISION 49, 49–55 (Isabelle Brocas & Juan D. Carillo eds., 2004).

252. *See id.*

253. *See* Colin Camerer, Samuel Issacharoff, George Loewenstein & Ted O'Donoghue, *Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism,"* 151 UNIV. PA. L. REV. 1211, 1227–30 (2003).

254. *Id.* at 1219–26.

defaults increase retirement savings.[255]

The analogous policy in the crime prevention context is probably to pay individuals now to enter into programs that they will find costly to leave. Residential treatment in remote locations offers the most obvious example, but there are many ways to make exit costly other than a pricey cab ride back from the countryside. Drug and alcohol cessation programs often strive to create strong in-group bonds for participants so that social bonds and peer pressure encourage continuing participation.[256] Similarly, successful programs often enlist friends and family to help with their efforts, adding another layer of social pressure to stick with it (and potentially removing stressors from those sources that might encourage drug use).[257] A hyperrational person who otherwise is unwilling to join such a program would not be willing to accept a small present payment to do so, knowing that she will find quitting later socially painful.[258] But by definition, the present-biased actor doesn't fully account for future consequences; she takes the reward and worries about the downsides later.

V. THE MORAL HAZARD PROBLEM IS OVERSTATED

So far we've seen an array of economic arguments in favor of rewards over imprisonment. Stacked up on the other side are two long-standing arguments against rewards: moral hazard and cost-effectiveness. Past commentators are correct that both these factors should be central in our decision about how to prevent crime. But neither argument is nearly as potent as others have assumed. This Part addresses moral hazard, and then the next will take on cost.

What is "moral hazard"? Many readers will be familiar with the basic concept of moral hazard in the context of insurance.[259] Consider that private insurance does not typically cover intentional acts, and for good reason.[260] If I could get a big insurance payout by clobbering my neighbor, many backyard disputes could quickly turn

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255. *See* John Beshears, James J. Choi, David Laibson & Brigitte C. Madrian, *The Importance of Default Options for Retirement Saving Outcomes: Evidence from the United States*, *in* SOCIAL SECURITY POLICY IN A CHANGING ENVIRONMENT 167, 188 (Jeffrey Brown, Jeffrey Liebman & David A. Wise eds., 2009).

256. *See generally* Gary M. Burlingame, Bernhard Strauss & Anthony S. Joyce, *Change Mechanisms and Effectiveness of Small Group Treatments*, *in* BERGIN AND GARFIELD'S HANDBOOK OF PSYCHOTHERAPY AND BEHAVIOR CHANGE 640 (Michael J. Lambert ed., 6th ed. 2013). Continuing participation, not surprisingly, is strongly correlated with quitting. D. Dwayne Simpson, *A Conceptual Framework for Drug Treatment Process and Outcomes*, 27 J. SUBSTANCE ABUSE TREATMENT 99, 100 (2004).

257. Simpson, *supra* note 256, at 109.

258. *See* Gary S. Becker & Kevin M. Murphy, *A Theory of Rational Addiction*, 96 J. POL. ECON. 675, 691, 693 (1988) (arguing that rational addicts would find quitting to reduce their well-being, and that they will anticipate this effect in choosing how and when to desist).

259. For overviews see David M. Cutler and Richard J. Zeckhauser, *The Anatomy of Health Insurance*, *in* 1A HANDBOOK OF HEALTH ECONOMICS 563, 576–87 (Anthony J. Culyer & Joseph P. Newhouse eds., 2000); Ronen Avraham, *The Economics of Insurance Law–A Primer*, 19 CONN. INS. L.J. 29, 66–76 (2012).

260. Posner, *supra* note 134, at 1203.

ugly.[261] So, too, I shouldn't expect to collect on my auto insurance policy if I failed to fix my shrieking brakes. This is the moral hazard problem: insurance can increase harms since the insured has diminished incentives to avoid causing or suffering injury.[262]

The moral hazard concern has historically been one of the most powerful arguments against rewards in a criminal setting.[263] Theorists of regulation sometimes call this same idea the "polluter pays" principle: people or entities who threaten harm to the public shouldn't expect to be reimbursed fully for their efforts.[264] Instead, they should bear costs, so that they have incentives to mitigate that harm.[265] And this is socially efficient, among other reasons, because the people or entities who threaten harm typically are in the best position to know about and control the level of damage that they do.[266]

What is puzzling about these accounts is that, while they draw on moral hazard arguments familiar to private insurance law, they fail to also adopt the standard solution insurance law offers. In most cases, insurers do not refuse to insure parties who might be in a position to increase the insurer's costs. Instead, the insurer charges a co-pay or imposes a deductible.[267] You have to kick in some of the cost of your dental visits because your insurer believes that otherwise you wouldn't floss. That is, the insured must still bear some of the cost of risks that she could potentially prevent or mitigate so that she has a reason to take precautions. Co-pays can often be small, relative to the total cost of the injury, because the insured is very risk averse compared to the insurer: a small co-pay is enough to encourage her to take a fair amount of precaution.[268]

We can translate this insight to public law by looking to the work of Gerrit De Geest and Giuseppe Dari-Mattiacci (who, to extend the life of my keyboard, are hereinafter "DGDM"). DGDM argue that societies should often prefer rewards, or

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261. Just kidding, Jeremy. No, no, you just keep letting your dog dig in our garden, it doesn't bother us at all.

262. Cutler & Zeckhauser, *supra* note 259, at 576–77.

263. *See* sources cited *supra* note 28.

264. *E.g.*, Jonathan Remy Nash, *Too Much Market? Conflict Between Tradable Pollution Allowances and the "Polluter Pays" Principle*, 24 HARV. ENV'T L. REV. 465, 466–67 (2000).

265. *See* Louis Kaplow, *An Economic Analysis of Legal Transitions*, 99 HARV. L. REV. 509, 527–30 (1986).

266. *See id.*

267. Avraham, *supra* note 259, at 71–72; Cutler & Zeckhauser, *supra* note 259, at 586–87. An alternative mechanism with similar economics is "experience rating," under which insureds pay higher premiums after incurring insurable payouts. Avraham, *supra* note 259, at 73. We could imagine a kind of experience rating for preventive benefits. Potentially an individual could face a larger sentence if they commit crimes after enrolling in a prevention program. But this would likely be ineffective because experience rating does not work well when the insured is present biased. *See* Brian Galle & Kirk J. Stark, *Beyond Bailouts: Federal Tools for Preventing State Budget Crises*, 87 IND. L.J. 599, 618–19 (2012) (offering this point as a reason to reject experience-rated risk pooling for states).

268. *See* Cutler & Zeckhauser, *supra* note 259, at 587 tbl.5 (summarizing prior simulation results for optimal cost sharing in health insurance); Mark V. Pauly, *Taxation, Health Insurance, and Market Failure in the Medical Economy*, 24 J. ECON. LIT. 629, 640 (1986) (describing optimization problem in insurance cost sharing).

"carrots," over penalties, or "sticks," because carrots reduce deadweight loss.[269] In their model, carrots are funded with tax dollars so that the burden of paying for them rests with society at large.[270] Penalties, in contrast, flow in the other direction, harming a few for the benefit of the many.[271] The same is largely true if individuals comply rather than be punished; assuming that compliance is costly and that compliers are not reimbursed, it is they who shoulder the burden of avoiding social harms.[272] By sharing the burden, the total social cost of the burden is lessened.

Why would that be? The intuition behind the model is a familiar one to tax scholars, or torts experts versed in the work of Guido Calabresi. At its most basic, the idea is simply that social costs should be shared widely, rather than concentrated on a few people, because of diminishing marginal utility.[273] As we saw already, diminishing marginal utility means that dollars have greater value when we have less of them. Thus, taking a few dollars from everyone is far better than taking an equal sum from one person, assuming all are equally well-off to begin with. With cost spreading, everyone gives up a latte, while with concentrated costs, one person is left destitute. Calabresi argued that this was the genius of accident insurance: it socialized the costs of driving instead of leaving them to fall on the unlucky drivers who crash.[274]

The move that DGDM make (following HLA Hart) [275] is to translate this framework to crime. In essence, they conceive of everyone as a potential criminal defendant, each of us with a risk of being thrown into circumstances where we might come up against the law. Carrots offer a kind of insurance: they lead us away from law breaking, but the cost of avoiding harm is shared by all those whom the law protects.[276]

DGDM omit moral hazard from their account, but in recent work with John Brooks and Brendan Maher, I showed how that factor can easily be incorporated into the DGDM analysis.[277] We argue for adopting insurance solutions to public law

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269. Gerrit De Geest & Giuseppe Dari-Mattiacci, *The Rise of Carrots and the Decline of Sticks*, 80 U. Chi. L. Rev. 341, 367–69, 372–73 (2013).

270. *Id.* at 358, 366.

271. *Id.*

272. *See id.* at 368–69.

273. H. Cremer, F. Gasmi, A. Grimaud & J.J. Laffont, *Universal Service: An Economic Perspective*, 72 Annals Pub. & Coop. Econ. 5, 29 & n.38 (2001). DGDM offer a more nuanced account in which redistribution may or may not be desirable, depending on its incentive effects and the exact design of the carrot or stick mechanism. De Geest & Dari-Mattiacci, *supra* note 269, at 360–61, 365–69. But they appear to concur that sticks tend to shift the costs of compliance onto compliers, while carrots can be financed with taxes imposed on all beneficiaries. *Id.* at 369.

274. Guido Calabresi, The Cost of Accidents: A Legal and Economic Analysis 39–40, 45 (1970).

275. *See* H.L.A. Hart, Punishment and Responsibility: Essays in the Philosophy of Law 158–85 (1968).

276. *See* De Geest & Dari-Mattiacci, *supra* note 269, at 369 (explaining that carrots can be financed by general public).

277. John Brooks, Brian Galle & Brendan Maher, *Cross-Subsidies: Government's Hidden Pocketbook*, 106 Geo. L.J. 1229, 1273–74 (2018).

situations that mimic insurance.[278] Again, an optimally designed insurance contract balances the benefits of risk spreading against the costs of moral hazard.[279] Thus, societies should often want to offer a mix of carrots—which, like insurance, spread costs—and sticks, which serve to target costs on those who must comply.[280]

Put another way, DGDM's risk-spreading argument could be taken as an argument not necessarily for prison abolition but for prison reduction. The optimal risk allocation for preventing social harms should make the cost of noncompliance painful enough that polluters have incentives to mitigate or robbers incentives to find another line of work. But it should also be balanced so that not all this pain falls only on those individuals unlucky enough to have to decide whether to rob or to eat. Government policy should combine rewards with small or occasional fines or imprisonment.

But if the solution to moral hazard is as simple as co-pays, a skeptic might argue, why don't private insurers typically cover intentional acts? One possible answer is that the private insurer cannot impose a prison sentence.[281] In other words, the optimal insurance contract for intentional acts likely requires the insured to bear more risk than she can realistically afford, and the insurer has no way to impose costs on the insured other than by asking her to pay.[282]

Adverse selection provides another possible explanation for why intentional acts go uninsured. In a world with competing insurers, prices and terms for insurance contracts will vary. Those seeking insurance usually know the likelihood that they will commit an intentional act better than the insurer can.[283] So those who don't expect to need insurance won't pay much for it. If insurers charge a lot for premiums—say, because they can't impose the optimal co-pay—then only those at greatest risk of needing insurance will buy.[284] That doesn't work; the insurer can't pay out more than it takes in.[285]

These problems with private insurance are not arguments against rewards because governments face neither of these limitations. The government sets the "insurance contract" available to each person, not vice versa, so that potentially there is no adverse selection. That is the central argument for mandatory insurance models, such as the Affordable Care Act, as well as for "single-payer" systems like Britain's National Health Service.[286] And the government's tools for limiting moral hazard are

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278. *Id.*

279. Cutler & Zeckhauser, *supra* note 259, at 586–97; *see* Pauly, *supra* note 268, at 640.

280. Brooks, Galle & Maher, *supra* note 277, at 1273–74.

281. *See* Posner, *supra* note 134, at 1203–04 (offering limited access to insurance as a rationale for criminal liability).

282. *See* George A. Mocsary, *Insuring Against Guns?*, 46 CONN. L. REV. 1209, 1255 (2014) (observing that insurance for intentional shootings will not function properly unless shooter has very substantial assets).

283. Avraham, *supra* note 259, at 44.

284. *Id.*

285. *See id.* (describing this "death spiral" problem).

286. *E.g.*, Cutler & Zeckhauser, *supra* note 259, at 606, 633 (describing but not clearly endorsing this position). Single-payer of course eliminates any potential benefits from having competing firms underwrite insurance contracts. *Id.* at 633. An alternative policy would be for government to "risk adjust," or provide subsidies to higher-risk pools sufficient to prevent

not limited to co-pays. The government can institute whatever mix of rewards and prison or other penalties that optimally balances risk spreading with moral hazard reduction.

Good targeting can also mitigate moral hazard, allowing a larger fraction of incentives to be rewards rather than punishments. In standard insurance models, the optimal division of payments between insurer and insured depends on the "elasticity" of the insured's response to insurance: how much does a person change their behavior when someone else is paying?[287] If people can and do readily change their behavior, they usually must face higher co-pays.

Translating this principle to prisons, the lesson is that eligibility for rewards should be based on definitions of "risk" or other eligibility criteria that are hard or very undesirable for potential recipients to adopt. Location again might be a plausible example. Within each urban area, a surprisingly large fraction of crimes originate with individuals from a tiny handful of blocks.[288] Residence on these blocks could be used as a major input into the calculation of whether positive incentives are available. Of course, there then would be an incentive to move to or remain in these neighborhoods, but most are so undesirable that the government's reward would be highly unlikely to change many decisions about where to live.[289] Another option would be to deliver rewards in a form, such as a housing vouchers, that encourages relocation away from the targeted area. This might be especially useful if living in the highest-risk places is not just predictive but actually causal, as suggested by the literature I reviewed in Part I.[290]

If we thought moral hazard was a serious concern, it would offer another argument against limiting prevention programs to during or after prison. Post-conviction rewards might reduce recidivism, but if they have any subjective value for potential offenders, they presumably also increase the likelihood of an initial crime.[291] An initial sentence of incarceration, as we have seen, in turn increases the likelihood of additional wrongdoing. So it is possible that post-conviction rewards actually

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death spirals, thereby mitigating some of the costs of adverse selection. This approach faces serious measurement and political economy challenges. *Id.* at 624–25.

287.   *See* Cutler & Zeckhauser, *supra* note 259, at 578–79.

288.   *See* Bocanegra, *supra* note 102, at 116; Meares, Katyal & Kahan, *supra* note 69, at 1191 (summarizing studies).

289.   Real-world experiments with housing vouchers find that many voucher recipients do not move but that this inertia is mostly due to administrative obstacles; when recipients have the assistance of a housing administration official, they change neighborhoods at very high rates. Peter Bergman, Raj Chetty, Stefanie DeLuca, Nathaniel Hendren, Lawrence F. Katz & Christopher Palmer, *Creating Moves to Opportunity: Experimental Evidence on Barriers to Neighborhood Choice*, 30–36 (Nat'l Bureau of Econ. Rsch., Working Paper No. 26164, 2019). Another explanation consistent with this evidence is that discrimination against voucher holders limits their mobility; it is of course much harder for landlords to discriminate when they must interact directly with a government employee. *Cf. id.* at 33–34 (reporting that tenants found role of housing officials in "brokering" apartment availability a helpful factor in relocating).

290.   *See supra* notes 63–68.

291.   Readers of a certain age may recall that in fact this is the central plotline of an O. Henry story, "The Cop and the Anthem."

increase crime, on net. At a minimum, requiring conviction as a condition of dispensing rewards looks to be an ineffective way of saving money.

VI. Cost Effectiveness: The Bottom Line

Besides moral hazard, the economic literature offers a second well-known argument against rewards: they're expensive.[292] Deterrence is relatively cheap because individuals who are in fact deterred do not need to be incarcerated, creating a kind of multiplier effect. In contrast, if government is going to reward us for good behavior, and if everyone is good, then government must pay everyone. Expenditures on any program add up very quickly when they are multiplied by three hundred million members of the population. Many of these individuals would have complied even without payment, making the payments largely wasted resources.

Although this point is correct in the abstract, it turns out to have fairly limited implications for crime prevention rewards policies. In this Part I will offer a back-of-the-envelope calculation for whether rewards policies are affordable. The bottom-line question, I suggest, is whether there is a viable path to a revenue-neutral and crime-neutral shift from prison spending to rewards. In other words, could we cut the prison budget and move that money to rewards, without also increasing crime? Since this is not a Hitchcock film, I will spoil the suspense: the answer is almost certainly yes.

The more challenging question is to estimate how extensive this exchange should be. There is little doubt we can productively trim the longest sentences, particularly for those classes of offenses where the propensity to recidivate is markedly lower among older individuals. As we continue reducing, though, at some point we get into the range where evidence suggests an additional term of imprisonment does have meaningful effects on crime so that it becomes important to know how productive an additional dollar spent on rewards would be.[293] Prison is said to reduce crime not only through deterrence but also through "incapacitation," or the fact that incarcerated individuals do not have the opportunity to commit some crimes, such as burglary. [294] I'll discuss the relative cost-effectiveness of rewards as against each of these in turn.

Of course, deciding whether something is cost effective requires us to first specify what it is we're trying to accomplish. One yardstick might simply be which policy can prevent crime at the lowest cost. Then our question would be: Can we reduce sentences and increase rewards without also increasing crime? As we've seen, though, there are massive potential social welfare differences between rewards and prison, even holding the amount of crime constant—rewards eliminate many forms of deadweight loss and negative externalities and can in turn create some positive externalities. The best measure of cost-effectiveness would thus be to compare the total social welfare effect of an incremental dollar spent on rewards or prisons.[295] But

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292. *See* sources cited *supra* note 26.

293. Pfaff, *supra* note 16, at 115.

294. Travis, Western & Redburn, *supra* note 1, at 131.

295. For one effort in this direction, see Mungan, *supra* note 117, at 17–22. Mungan attempts to estimate how efficient at raising money the U.S. tax system would have to be in order for rewards to be part of the optimal set of crime reduction incentives. *Id.* at 20–22. He

subjective well-being is hard to measure. In the comparisons to follow, I will therefore focus only on the relative costs of reducing crime, but the reader should understand that this framing is stacking the deck against rewards.

A. Rewards Versus Deterrence

There is no single answer to whether preventive rewards reduce crime more or less cost-effectively than deterrence. There are a wide variety of prevention programs, of course. As I reviewed in Part I, substantial empirical evidence suggests these programs reduce crime, though there are few studies that put these findings together with cost data to estimate crime prevention per dollar. I will instead emphasize the cost efficacy of prison. Crucially, there are diminishing returns to incarceration. The threat of a second year of prison deters less than the threat of the first year, and so on. This implies that, while short sentences might be more effective than rewards, longer sentences might be less effective.

Evidence also suggests that if rewards prevent any crime at all they are more effective per dollar than a large fraction of current prison expenditures. As we have already seen, the marginal deterrence of sentences longer than about five years is close to zero.[296] What if we simply took all the money now spent on these longer sentences and devoted it to rewards instead? Would this result in enough money to plausibly support nationwide prevention programs of any significant size?

To offer a back-of-the-envelope answer, I downloaded prison population data from the National Corrections Reporting Program (NCRP) for the period 2000 through 2014. NCRP is a survey of state prison populations for forty-three states, collected by the U.S. Bureau of Justice Statistics. NCRP reports, for each state and year, the number of individuals currently incarcerated. This figure is further broken down by the length of sentence currently being served by each individual, although sentences of more than five years are only reported in five-year bands, such as five to ten years or ten to fifteen years.

I implement a simulation in which all individuals sentenced to serve terms of more than five years were instead released at the end of their fifth year. I then calculate the change in expected prison population as a result of this policy.[297] In 2013, the last

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includes the welfare effects of using rewards instead of penalties but assumes that the elasticity of crime with respect to prison is uniform. *See id.* In contrast, I omit welfare effects but assume that the crime elasticity of prison varies by sentence length.

296.   And, to repeat, this finding was in a unique Italian setting that likely overestimates the usual deterrent effect of U.S. prison sentences. *See supra* note 42.

297.   All else equal, I assume that the odds an individual observed in a given year has served no more than five years to be five over the total expected years of their sentence. For example, the odds that a person serving a ten-year sentence has served five years or fewer, in any randomly drawn year during their sentence, is fifty-fifty. Thus for each year band, I estimate the share of individuals who on average have served five or fewer years by taking the ratio of five to the midpoint of the year band. I then multiply this share by the population in that band and use this as the total number of individuals in that band who be released. For instance, Alabama in 2014 reported 5244 individuals serving sentences of five to ten years. I calculated that 5/7.5, or 66.67%, of these individuals would on average have served five years or fewer. Thus, I infer that 33.33% of these individuals would be eligible for release under my

year for which I have complete data on all forty-three surveyed states, this comes to just about 180,000 individuals, out of an overall prison population in these states of approximately 1.5 million. That's 12% of the total population.[298]

Now let's put that in dollars. Many of the costs of prison are fixed, such as facilities maintenance and civil-service salaries.[299] The marginal cost of housing one additional individual (assuming no one is hired or fired and no additional buildings are closed or built) has been estimated around $18 to $20 thousand.[300] If we use that figure, our savings would be about $3.4 billion.

But although marginal cost savings are a reasonable way to think about the dollars involved in small, short-term changes in prison population,[301] we are instead examining a large and permanent policy. If prison populations really fell by 12% in perpetuity, buildings would close and guard positions would be eliminated. What if we instead drew on the estimate, also from around 2013, that direct nationwide costs of imprisonment ran about $80 billion?[302] Twelve percent of that is $9.6 billion. And this is a conservative estimate, since it omits some associated costs of the criminal justice system, such as health care and lawyers. Those are usually thought to add another $120 billion or so.

Let's call our national rewards budget $10 billion annually. That sounds like a lot, but there were also a lot of crimes nationally. Recent FBI figures estimate that there were about two million thefts of property worth more than $200, one million burglaries, 800,000 aggravated assaults, and around 300,000 other serious violent offenses (including robberies).[303] That would give us only about $2500 per crime for prevention, ignoring drug offenses. Still, this figure is close to the annual value of the Alaska dividend, which, as we have seen, seems to have considerably reduced property crimes.[304] So just blindly flinging the money spent on long prison sentences

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simulated policy. This resulted in a projected total of 1748 individuals released.

298. Again, this is only state prisons, not jails or federal detention facilities. Including federal figures in the calculations in the main text would bring the result up to a 15% release rate.

Where does this 15% estimate come from? According to the Federal Bureau of Prisons, there were 158,381 individuals serving sentences in federal facilities as of the beginning of 2020. *Sentences Imposed*, FED. BUREAU OF PRISONS (last visited Jan. 18, 2020), https://www.bop.gov/about/statistics/statistics_inmate_sentences.jsp [https://perma.cc/H5BR -2KUU]. Of these, there were 41,909 in the 5 to 10-year band, 34,846 serving 10–15 years, 18,714 serving 15–20, 22,859 serving more than 20, and 4525 with life sentences. Using the same calculation methods as for state prisons, these data would imply that 13,830 + 20,907 + 13,367 + 17,779 + 3702 = 69,585 federal prisoners have currently served more than five years.

299. Pfaff, *supra* note 4, at 957.

300. PFAFF, *supra* note 16, at 99.

301. *See id.* at 99–100.

302. *Id.* at 101.

303. *Table 23: Offense Analysis: Number and Percent Change, 2017–2018*, FED. BUREAU OF INVESTIGATION: UNIF. CRIME REPORTING, https://ucr.fbi.gov/crime-in-the-u.s/2018/crime -in-the-u.s.-2018/tables/table-23 [https://perma.cc/Z84T-ZXVJ]; *Crime in the United States, 2018: Aggravated Assault*, FED. BUREAU OF INVESTIGATION: UNIF. CRIME REPORTING, https://ucr.fbi.gov/crime-in-the-u.s/2018/crime-in-the-u.s.-2018/topic-pages/aggravated -assault [https://perma.cc/HTJ5-4796].

304. Dorsett, *supra* note 25, at 31–32, 49 fig.1.

in the general direction of likely offenders would prevent more crime than the deterrent effects of those sentences.

More sensibly, rather than trying to spend our money equally to prevent every crime, we would take this $10 billion and target it using the systems and technologies I've described. Ten billion would go a lot further if it were aimed at the relatively small number of U.S. neighborhoods where crime is most concentrated. It also would deliver higher impact if allocated by on-the-ground experts with training and access to risk information, as in the community policing and community courts models we encountered in Part I. In these kinds of settings, the few cost-effectiveness data we have suggest prevention is highly impactful. One California study concluded, for instance, that drug courts on average saved between $6 and $8 thousand per individual in avoided prison costs, even after accounting for the costs of the court and the treatment.[305]

B. Rewards Versus Incapacitation

In addition to deterrence, prison also prevents crime by "incapacitation," or just keeping individuals away from the opportunity to offend. By my rough calculations, derived from econometric studies, incapacitation may account for as much as three-quarters of all the crime reduction that prison accomplishes.[306] In other words, despite the likely criminogenic effects of incarceration, jailing some individuals does appear to prevent crime on net.[307] So even if sentences of, say, more than five years do not deter, they may still reduce crime via incapacitation. Would this incapacitation be more or less cost-effective than prevention?

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305. See Fan, *supra* note 111, at 180, for a helpful overview of this and related studies.

306. Where does this three-quarters estimate come from? Levitt reports an overall elasticity of crime with respect to prison time of about 0.4. Steven D. Levitt, *The Effect of Prison Population Size on Crime Rates: Evidence from Prison Overcrowding Litigation*, 111 Q.J. ECON. 319, 337–39 (1996). This estimate combines deterrence and incapacitation effects. *Id.* at 346. Other studies, as we have seen, report elasticities of the deterrent effect of crime at around 0.1 or less. That implies that most of the impact Levitt observes is due to incapacitation. It must also be said that Levitt relies on an "instrumental variable" technique. *Id.* at 337. A classic malfunction of instrumental approaches is to inflate the measured coefficient, particularly when the "instrument" causally affects the outcome of interest. Joshua D. Angrist, Guido W. Imbens & Donald B. Rubin, *Identification of Causal Effects Using Instrumental Variables*, 91 J. AM. STAT. ASSOC. 444 § 4.2 (1996); *see* JOSHUA D. ANGRIST & JORN-STEFFEN PISCHKE, MOSTLY HARMLESS ECONOMETRICS 153 (paperback ed. 2009). This seems very likely. The existence of overcrowding and associated litigation both may tend to affect policing and charging decisions in ways that potential offenders can observe (or predict), which in turn would affect deterrence. Levitt relies on "overidentifying" tests to rule out this problem, Levitt, *supra* note 306, at 323, but these tests have since been shown to be unreliable. ANGRIST & PISCHKE, *supra*, at 205–13. His only other argument is that crime rates do not predict overcrowding litigation, Levitt, *supra* note 306, at 323, but this in no way addresses the policing and charging possibility.

307. For some crimes, however, incapacitation may be totally ineffective. Drug offenses are a likely example. Removing some potential dealers, without changing drug demand, would likely induce new competitors to enter the supplier market. Alternately, it might allow existing suppliers to increase supply, or, if they have market power, prices.

Unlike deterrence, incapacitation has no structural cost advantage over prevention. In theory, it is possible to deter offenders without paying to imprison them. But incapacitation requires us to pay every day for every potential offender we wish to refrain from crime. [308] Some forms of prevention are like this—a conditional payment that delivers rewards to nonoffenders requires a continuing stream of payments.[309] Others, though, more closely resemble deterrence, in the sense that a one-time payment, such as for drug treatment, may reduce the treated individual's propensity to offend for a long time afterwards.

For prevention efforts that require continual payouts, relative cost advantage comes down to two factors. One, of course, is the daily cost of the program. As we've seen, the marginal cost of incarcerating one person is likely around $20 thousand per year, excluding health and non-prison administrative costs. Many prevention programs will be competitive at that price point.[310] Again, it is very likely that incarceration imposes large social costs that are not captured on legislators' budgets, but for the sake of argument I am omitting these difficult-to-measure factors.

If we limit ourselves solely to the most measurable output, crime, and measurable input, budget dollars, the crucial determinant between incarceration and prevention is targeting. Both prevention and incapacitation costs are wasted if they are spent on someone who would not have committed crime.

Targeting cannot justify current U.S. practices. On average, only about one in three incarcerated U.S. individuals reoffend.[311] Older individuals reoffend at dramatically lower rates.[312] While this "age-crime curve" varies by offense category, individuals age out of the propensity to engage in crime very rapidly for most nondrug offenses.[313] This suggests that most of the money we now spend attempting to achieve incapacitation is wasted. We could easily reduce prison spending by billions without much impact on crime rates.

In theory, we could use the targeting methods I've already described for incapacitation too. Suppose it were the case that our targeting methods perfectly identified high-risk individuals. What if prevention methods only prevent crime for one in four participants, while incapacitation prevents (non-prison) crime with 100% effectiveness (albeit with some criminogenic side effects)? Since existing data mostly examine returns to prevention programs that were only modestly targeted, we

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308. Caulkins & Kleiman, *supra* note 54, at 305.

309. *See supra* notes 19–20 and accompanying text; *see also* Ehrlich, *supra* note 26, at 54 (noting that rehabilitation has no deterrent effect).

310. For a useful overview of studies of prevention program cost efficacy, see Fan, *supra* note 111, at 179–80.

311. William Rhodes, Gerald Gaes, Jeremy Luallen, Ryan Kling, Tom Rich & Michael Shively, *Following Incarceration, Most Released Offenders Never Return to Prison*, 62 CRIME & DELINQ. 1003, 1013–15 (2016) (reporting rate of re-offense within twelve years of original offense).

312. PFAFF, *supra* note 16, at 191.

313. Ghandnoosh, *supra* note 55, at 145–46; *see* Fain Williams, *supra* note 205, at 131–32. For more discussion of life-cycle changes in propensity to commit crime, see M. Eve Hanan, *Incapacitating Errors: Sentencing and the Science of Change*, 97 DENV. L. REV. 151, 180–86 (2019).

don't have good evidence on this dimension of cost efficacy.[314]

Even if that were so, prevention would still offer major benefits. For one, by definition, incapacitation only reaches individuals who have already committed at least one offense.[315] It leaves untouched a large pool of potentially risky individuals: those who have not yet been arrested for a crime. Any targeted program will involve diminishing returns. We treat the highest-risk individuals first, so that as we reach more and more, we are decreasingly likely to be spending money effectively.[316] Researchers find that the United States is extremely far down this diminishing returns curve for incapacitation, with U.S. sentences on average preventing only about one-sixth the number of crimes as nations that jail fewer individuals.[317] This suggests that shifting preventative efforts over to a population that has not been targeted at all by incapacitative sentencing—the unarrested—should offer vastly higher marginal returns.[318]

Another point in prevention's favor is that many major prevention efforts also incapacitate. We don't have to lock people up in order to remove them from settings where they can easily engage in crime. Schools "incapacitate" in this sense.[319] So do jobs and families.[320] If we can achieve incapacitation through methods that do not destroy human capital and do not bleed families and communities, these approaches almost certainly offer a higher social return per dollar, even if measured only by the

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314.   One survey reported that prison and post-release treatment programs were about four times as effective in preventing additional crimes as incarceration, but it does not include cost information. Taxman & Murphy, *supra* note 59, at 193–94. We do know that policing expenditures are far more cost-effective than imprisonment costs. PFAFF, *supra* note 16, at 117. Could we use "community policing" to identify candidates for preventive services? Perhaps, but again we are at the limits of our data. Findings of police efficacy are generally in settings where policing leads to imprisonment; we do not know whether returns would be as high in a nonpunitive setting.

315.   Nothing in economic theory rules out incapacitation for nonoffenders. But such approaches are probably unconstitutional in the United States if applied outside certain very narrow classes of extremely dangerous individuals. *Kansas v. Crane*, 534 U.S. 407, 409–13 (2003). And they offend our sense of justice. If justice does not permit incapacitative detention for large segments of the population, how can it permit incapacitation for young men of color at far higher rates than older white women?

316.   *See* Rhodes, Gaes, Luallen, Kling, Rich & Shively, *supra* note 311, at 1020–21 (noting that recidivism is highly concentrated, so that a large share of prison beds are occupied by a small share of total population of offenders).

317.   *See* Nagin, *supra* note 29, at 84. Older estimates of marginal returns to incapacitation are thus much larger than modern estimates when many more people are in prison. Paolo Buonanno & Steven Raphael, *Incarceration and Incapacitation: Evidence from the 2006 Italian Collective Pardon*, 103 AM. ECON. REV. 2437, 2439 (2013). Studies of the contemporary United States suggest that one prison year of incapacitation prevents two to four crimes. *Id.* The researchers' estimate for 2006 Italy is fourteen to eighteen crimes per prison year. *Id.* at 2451–52. They note the Italian incarceration rate is vastly lower than the United States, *id.* at 2460, and that incapacitation's marginal efficacy drops quickly, so they agree with U.S. estimates.

318.   I explain the mathematical basis for this point in Brian Galle, *The Problem of Intra-Personal Cost*, 18 YALE J. HEALTH POL'Y L. & ETHICS 1, 49–50 (2018).

319.   Draca & Machin, *supra* note 64, at 397.

320.   ROCQUE, *supra* note 15, at 100–01, 154–56.

most salient of inputs and outputs. After all, working individuals usually pay taxes, and working parents contribute to household income, reducing the government outlay of social services.[321]

<div align="center">CONCLUSION</div>

Taken together, the arguments that U.S. efforts at crime prevention should involve vastly more positive incentives are overwhelming. At current levels of incarceration, we are getting very little marginal return on prison spending—if cuts were made with any care at all, we could save billions without increasing crime. At the same time, the marginal returns to new spending on positive incentives look to be very large, especially if carefully targeted.

Thus, for example, evidence powerfully suggests that an intensive program of benefits aimed at neighborhoods of deep poverty and rampant crime would be extremely effective both at reducing crime and increasing social justice. As we have seen, rewards targeted in this fashion would lift up blighted communities, as opposed to mass incarceration's tendency to drive them further into a cycle of poverty and lawlessness. It is extremely unlikely, given the current unattractiveness of many of these areas, that geographically targeted incentives would draw in new residents interested only in the benefits. Even if they did, these new residents would likely themselves already live quite close to the most blighted areas, and themselves be quite poor. Delivering benefits primarily in the form of drug treatment and housing mobility assistance would further lessen any "moral hazard."

As I said at the outset, I have no particular insight into how to make politically popular the message that society should make large-scale, new commitments to poor communities, many of them communities of color. The goal here is only to remove one possible source of self-justification that opponents of such spending may have clung to: the notion that such communities are to blame for their own failures and that efforts to aid them in their struggle for security would only worsen the problem. We've seen that the opposite is true, that draconian policing and incarceration policies likely worsen the circumstances people in crime-stricken communities face, and therefore, that positive incentives offer a far more promising path forward.

While I have less to say about whether positive incentives make sense as a universal replacement for incarceration, my analysis suggests that crime reduction might be an important side effect of a universal basic income or other broad safety-net programs. I cannot say on the strength of my evidence here that we should abolish prisons (although I also cannot say we shouldn't). At some point, as we expand positive incentives and reduce incarceration, the marginal returns of the two may equalize; for potential offenders who are very hard to discourage from crime, for instance, incapacitation may be more cost effective. Still, past claims that cash payouts are ineffective at reducing crime have been dramatically misinterpreted, and new evidence is suggesting unconditional cash might be more effective at discouraging crime even than conditional payouts. That surely should count in any cost-benefit analysis of safety-net or UBI spending.

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321. *See* Heckman, Moon, Pinto, Savelyev & Yavitz, *supra* note 83, at 120–22 (estimating social benefit of education on reduced crime, and in turn on higher wages and reduced demands on social services).