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Tax, Command...or Nudge? Evaluating the New Regulation

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Tax, Command . . . or Nudge?: Evaluating the New Regulation

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This Article compares for the first time the relative economic efficiency of "nudges" and other forms of behaviorally inspired regulation against more common policy alternatives, such as taxes, subsidies, or traditional quantity regulation. Environmental economists and some legal commentators have dismissed nudge-type interventions out of hand for their failure to match the revenues and informational benefits taxes can provide. Similarly, writers in the law and economics tradition argue that fines are generally superior to nonpecuniary punishments.

Drawing on prior work in the choice-of-instruments literature, and contrary to this popular wisdom, I show that nudges may out-perform fines, other Pigouvian taxes, or subsidies in some contexts. These same arguments may also imply the superiority of some traditional "command and control" regulations over their tax or subsidy alternatives. I then apply these lessons to a set of contemporary policy controversies, such as New York City's cap on beverage portion sizes, climate change, retirement savings, and charitable contributions.

Introduction

It wasn't anyone's first choice. Diabetes, hypertension, and heart attacks were all on the rise in New York, and with them the City's costs of care.[1] The mayor's office explored a "sin tax" on soda and fatty foods, but food and beverage industry lobbyists went to Albany and blocked the tax in the state legislature.[2] So the City leaders searched for other ways to confront its citizens with the true costs of unhealthy lifestyles. They came up with the cap: No covered establishment could sell sugary beverages over 16 ounces in volume.[3] New York would become the City of Refills.

Critics were legion. Some complained that the city was setting up a "nanny state" to protect New Yorkers from themselves.[4] Others, perhaps

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1. *Diabetes Among New York City Adults*, NYC VITAL SIGNS (N.Y.C. Dep't of Health & Mental Hygiene), Nov. 2009, at 1, 3; Notice of Public Hearing, Opportunity to Comment on the Proposed Amendment of Article 81 (Food Preparation and Food Establishments) of the New York City Health Code, found in Title 24 of the Rules of the City of New York (June 5, 2012), *available at* http://www.nyc.gov/html/doh/downloads/pdf/notice/2012/amend-food-establishments .pdf.

2. Michael M. Grynbaum, *New York Plans to Ban Sale of Big Sizes of Sugary Drinks*, N.Y. TIMES, May 30, 2012, http://www.nytimes.com/2012/05/31/nyregion/bloomberg-plans-a-ban-on-large-sugared-drinks.html?pagewanted=all.

3. *Id.*

4. Nick Gillespie, *3 Cheers for Coercive Paternalism-Or, Why Rich, Elected Officials Really Are Better than You*, REASON (Mar. 25, 2013, 10:41 AM), http://reason.com/blog/2013/03/25/3-cheers-for-coercive-paternalism-or-why; Katrina Trinko, *Soda Ban? What About Personal*

unaware of the legal maneuverings that preceded the cap, argued something of the opposite: if the City wanted to make beverages scarcer, it should have just imposed a tax.[5] Yet others doubted the cap would have any effect at all.[6] Despite the many skeptics, and as of this writing a set-back in the New York courts, the idea has proven popular in other municipalities, several of which are reportedly studying versions of their own.[7]

The beverage cap arrives after a decade of debate over "nudges" and other forms of behaviorally informed regulation. As Richard Thaler and Cass Sunstein, Ian Ayres, and others have ably summarized, evidence shows us that innocuous little speed bumps, like the nuisance of getting back up to fetch another cup of cola, or of filling out a form to start saving for retirement, can have surprising impact on individual behavior.[8] Choice architecture, the timing and context in which options are presented, matters.[9] That ice-cold Coke is a lot more tempting when we can see it fizzing sweetly beneath our thirsty lips than when it's stowed around the corner.[10] Time will tell, but there are now many good reasons to think the cap will work better than some have predicted.

Choice?, USA TODAY (Mar. 10, 2013, 5:40 PM), http://www.usatoday.com/story/opinion/2013/03/10/soda-ban-what-about-personal-choice-column/1977091/.

5. Sarah Kliff, *Why Ban Soda When You Can Tax It?*, WONKBLOG, WASH. POST (June 1, 2012, 1:16 PM), http://www.washingtonpost.com/blogs/wonkblog/post/why-ban-soda-when-you-can-tax-it/2012/06/01/gJQAT27E7U_blog.html; Nathan Sadeghi-Nejad, *NYC's Soda Ban Is a Good Idea, But a Tax Would Be Better*, FORBES, Sept. 13, 2012; Matthew Yglesias, *A Soda Tax Would Be Smart, Banning Big Cups Is Dumb*, SLATE (June 1, 2012, 10:49 AM), http://www.slate.com/blogs/moneybox/2012/06/01/a_soda_tax_would_be_smart_banning_big_cups_is_dumb.html; *see also* Robert H. Lustig et al., *The Toxic Truth About Sugar*, 482 NATURE 27, 28 (2012) (describing taxes as "the most . . . effective" policy for curbing excess sugar consumption).

6. Jacob Sullum, *The Benefit of Bloomberg's Big Beverage Ban*, REASON (June 20, 2012), reason.com/archives/2012/06/20/the-benefit-of-bloombergs-big-beverage-b.

7. Brock Parker, *Cambridge Mayor Proposes Limits on Soda Sizes: Idea Surprises City Council*, BOSTON GLOBE, June 19, 2012, http://www.bostonglobe.com/metro/2012/06/18/cambridge-consider-limiting-soda-sizes/j9PEQXqVRkbPWJBXALVYDP/discuss.html; Mark Segraves, *Some on D.C. Council Favor Restricting Sugary Drinks*, WTOP (Oct. 23, 2012, 7:22 AM), http://www.wtop.com/41/3088930/DC-Council-considers-restricting-sugary-drinks. In addition, many jurisdictions have already imposed some kind of tax on unhealthy food or drink. Alberto Alemanno & Ignacio Carreño, *Fat Taxes in the EU Between Fiscal Austerity and the Fight Against Obesity*, 2011 EUR. J. RISK REG. 571, 571–72; Michael F. Jacobson & Kelly D. Brownell, *Small Taxes on Soft Drinks and Snack Foods to Promote Health*, 90 AM. J. PUB. HEALTH 854, 855 tbl.1 (2000).

8. *See, e.g.*, IAN AYRES, CARROTS AND STICKS 3–44 (2010); RICHARD H. THALER & CASS R. SUNSTEIN, NUDGE: IMPROVING DECISIONS ABOUT HEALTH, WEALTH, AND HAPPINESS 74–102 (rev. ed. 2009).

9. THALER & SUNSTEIN, *supra* note 8, at 83–102.

10. For overviews of the evidence that portion sizes affect consumption, see BRIAN WANSINK, MINDLESS EATING 17–19, 47–52 (2006), and Pierre Chandon, *How Package Design and Packaged-Based Marketing Claims Lead to Overeating*, 35 APPLIED ECON. PERSPECTIVES & POL'Y 7, 13–18 (2013).

Many other policy designers have taken those lessons to heart. Both the United States and the United Kingdom have recently launched government offices to expand the use of behaviorally informed regulation.[11] Efforts are already under way to cue families about their energy usage, to display healthy cafeteria foods in ways that are more appealing to kids, to make organ donations psychologically easier, and to make abortions more "informed" but emotionally more difficult.[12] Some noted economists have hinted recently at replacing the entire $125 billion in U.S. tax incentives[13] for retirement savings with a system in which individuals will have to opt out of saving rather than the most common current default, which is to opt in.[14] Proposals to rely on nudges now span the globe and virtually every regulatory domain.[15]

Despite the rapid policy evolution of nudges, debate over whether they *should* be used is less developed.[16] To be sure, there has been much debate over whether nudges escape the standard "paternalism" critique of government regulation. Proponents argue that nudges represent "libertarian paternalism" or are otherwise not coercive in the sense of traditional government regulation: People always retain the freedom to defy the government's preferences, and in many cases the costs of defiance are quite small.[17] Yet these arguments seem not to have assuaged the many anti-paternalism complaints about the nudge framework.[18]

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11. RHYS JONES ET AL., CHANGING BEHAVIOURS: ON THE RISE OF THE PSYCHOLOGICAL STATE xii (2013); Cheryl K. Chumley, *White House Presses for Team of 'Nudge' Experts to Sway American Behavior*, WASH. TIMES, July 30, 2013, http://www.washingtontimes.com/news/2013/jul/30/white-house-presses-team-nudge-experts-sway-americ/.

12. *See, e.g.*, THALER & SUNSTEIN, *supra* note 8, at 1–2, 177–84, 231–39; Hunt Allcott et al., *Energy Policy with Externalities and Internalities* 33–34 (Nat'l Bureau of Econ. Research, Working Paper No. 17977, 2012), *available at* http://www.nber.org/papers/w17977; *A Nudge on a Hot Button Issue*, NUDGE (May 1, 2008), http://nudges.org/a-nudge-on-a-hot-button-issue-abortion/.

13. *See infra* note 247 and accompanying text.

14. Raj Chetty et al., *Active vs. Passive Decisions and Crowdout in Retirement Savings Accounts: Evidence from Denmark*, Q.J. ECON. (forthcoming) (manuscript at 43), *available at* http://www.rajchetty.com/index.php/papers-and-data/papers-and-data-listed-chronologically.

15. JONES ET AL., *supra* note 11, at vii–xii; *see also* On Amir & Orly Lobel, *Liberalism and Lifestyle: Informing Regulatory Governance with Behavioural Research*, 2012 EUR. J. RISK REG. 17, 17–18.

16. *See* Pierre Schlag, *Nudge, Choice Architecture, and Libertarian Paternalism*, 108 MICH. L. REV. 913, 919 (2010) (offering this critique of the nudge framework).

17. Colin Camerer et al., *Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism,"* 151 U. PA. L. REV. 1211, 1212 (2003); Cass R. Sunstein & Richard H. Thaler, *Libertarian Paternalism is Not an Oxymoron*, 70 U. CHI. L. REV. 1159, 1160–62 (2003) [hereinafter Sunstein & Thaler, *Libertarian Paternalism*].

18. *See* Claire A. Hill, *Anti-Anti-Anti-Paternalism*, 2 N.Y.U. J. L. & LIBERTY 444, 445–48 (2007); Jeffrey J. Rachlinski, *The Uncertain Psychological Case for Paternalism*, 97 NW. U. L. REV. 1165, 1219–25 (2003); Mario J. Rizzo & Douglas Glen Whitman, *The Knowledge Problem of New Paternalism*, 2009 BYU L. REV. 905, 909; Joshua D. Wright & Douglas H. Ginsburg, *Behavioral Law & Economics: Its Origins, Fatal Flaws, and Implications for Liberty*, 106 NW. U.

These debates are unlikely to end soon. Libertarians reject the claim that nudges do not reduce human freedom.[19] Nor do they see nudges as distinctive on that front: as the Harvard economist Ed Glaeser argues, taxes too permit individuals to defy the government at a price that sometimes is modest.[20] A soda tax can readily be avoided by skipping the sipping, and abstinence is easy for those without a sweet tooth.

Nudge proponents have for some reason left aside another strong potential argument. Even if nudges and their ilk are no less coercive than other forms of regulation, might they be preferable because they are economically more efficient?[21] If so, in what settings? Assuming policy makers can choose freely among both new and old regulatory instruments, what factors should they consider in deciding which to use?

This Article takes up these questions. I argue that nudges and other novel regulatory instruments can be evaluated using tools that are mostly already familiar in the economics of regulation. For example, at least since Gary Becker's seminal 1968 article, punishment theorists have argued over whether fines are a better enforcement tool than prison, with "shaming" and other collateral sanctions more recently joining the mix.[22] Environmental economists similarly debate the regulatory choice between taxes and other regulatory options, such as "command and control" regulation.[23]

Commentators overwhelmingly prefer taxes and other "price instruments" to regulation, and this would seem to be bad news for nudge defenders.[24] Both taxes and regulation distort private behavior. Taxes also bring in revenues, though, which can be used to improve the lives of those

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L. REV. 1033, 1067–79 (2012); M. Ryan Calo, *Code, Nudge, or Notice?* 10–13 (Univ. of Wash., Legal Studies Research Paper No. 2013-04, 2013), *available at* http://ssrn.com/abstract=2217013.

19. *Cf.* On Amir & Orly Lobel, *Stumble, Predict, Nudge: How Behavioral Economics Informs Law and Policy*, 108 COLUM. L. REV. 2098, 2120–22 (2008) (suggesting that nudges are not value neutral); Gregory Mitchell, Review Essay, *Libertarian Paternalism is an Oxymoron*, 99 NW. U. L. REV. 1245, 1260–61 (2005) (arguing that libertarians would not be persuaded by Sunstein and Thaler's welfarist claims).

20. *See* Edward L. Glaeser, *Paternalism and Psychology*, 73 U. CHI. L. REV. 133, 135 (2006) (comparing a nudge to a psychic tax).

21. *See* Chetty et al., *supra* note 14 (noting that normative comparison of defaults and price instruments would be "a natural next step" for the literature).

22. Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169, 196–99 (1968); A. Mitchell Polinsky & Steven Shavell, *The Theory of Public Enforcement of Law*, *in* 1 HANDBOOK OF LAW & ECONOMICS 403, 407–08, 409 & n.10 (A. Mitchell Polinsky & Steven Shavell eds., 2007); Dan M. Kahan & Eric A. Posner, *Shaming White-Collar Criminals: A Proposal for Reform of the Federal Sentencing Guidelines*, 42 J.L. & ECON. 365, 366–68 (1999); Eric Rasmusen, *Stigma and Self-Fulfilling Expectations of Criminality*, 39 J.L. & ECON. 519, 520 (1996).

23. Gloria E. Helfand et al., *The Theory of Pollution Policy*, *in* HANDBOOK OF ENVIRONMENTAL ECONOMICS 249, 251, 287 (Karl-Göran Mäler & Jeffrey R. Vincent eds., 2003); Ian W.H. Parry & Wallace E. Oates, *Policy Analysis in the Presence of Distorting Taxes*, 19 J. POL'Y ANALYSIS & MGMT. 603, 608–10 (2000).

24. For elaboration of the points in this paragraph, *see infra* subparts II(A) and II(B).

who are inconvenienced by the regulatory policy. Glaeser claims that this same factor makes taxes more economically efficient than nudges.[25] Moreover, commentators argue that prices can reveal private information that other unpriced regulation—such as, perhaps, New York's beverage limits—cannot.[26]

As I will attempt to show, these claims about the superiority of taxes and tax-like instruments rest on overly simplifying assumptions, neglect possible innovations in governance structures, and do not apply fully for some nudges. For example, I argue that the supposedly unique informational benefits of price instruments can be captured through small-scale experiments, and this information used to run a larger regulatory scheme. I also argue that the revenue benefits of price instruments are considerably smaller than commentators assume in many settings; among other reasons, I show that nudges may have lesser negative impact on labor supply than their tax-like alternatives.

Further, by their nature prices usually require us to transfer resources from one party to another. Prior authors, including this one, have debated government's choice between two kinds of prices.[27] On the one hand are sticks, which can include taxes and other kinds of subjective changes for the worse.[28] On the other are carrots, which can include subsidies, or perhaps just relief from a currently expected cost. Although these instruments usually have very similar marginal effects, they also can differ importantly from one another in their impact on actors' preferences, in their incentives for future behavior, in their distributive consequences, and in their politics. Choosing between the two often requires balancing between these considerations.

Nudges and other transferless regulation, I'll argue, represent a hybrid or middle ground between sticks and carrots, and thus offer yet a third set of possible trade-offs.[29] For example, it is true that the beverage cap brings in no revenue for New York. But at the same time, it may also have better distributive consequences than a soda tax and avoid unwanted effects on

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25. Glaeser, *supra* note 20, at 150.

26. *See infra* subpart II(A).

27. Giuseppe Dari-Mattiacci & Gerrit De Geest, *Carrots, Sticks, and the Multiplication Effect*, 26 J.L. ECON. & ORG. 365, 365–66 (2009); Brian Galle, *The Tragedy of the Carrots: Economics and Politics in the Choice of Price Instruments*, 64 STAN. L. REV. 797, 813–40 (2012); Jonathan Baert Wiener, *Global Environmental Regulation: Instrument Choice in Legal Context*, 108 YALE L.J. 677, 755–60 (1999).

28. For discussion of the points in this paragraph, see *infra* subpart II(C).

29. I don't mean to suggest that the three are mutually exclusive. *See* Michael P. Vandenbergh et al., *Regulation in the Behavioral Era*, 95 MINN. L. REV. 715, 719 (2011) (proposing "[p]airing price-[based] . . . approaches with behavioral approaches").

preferences and incentives.[30]   Whether the cap is an attractive policy depends on the weights attached to these alternative consequences.

Similarly, as I show through additional examples, many other nudges can be compared directly to tort liability, taxes, or subsidies. Nudges might represent an important way forward for preventing climate change, where politics has stymied the best choices but the remaining traditional alternatives are mostly subsidies with crippling side-effects. At the same time, nudge enthusiasts may want to do some additional calculations before rushing to scrap the U.S. retirement-incentive system, as some noted authors have recently proposed.[31]

Part I of the Article sketches some background for readers new to these concepts. Part II lays the groundwork for later analysis by refining existing tools for comparing policy instruments. Part III employs my framework to compare nudges and other novel regulation to traditional alternatives. Part III also argues that the prevailing view of the superiority of corrective taxation over regulation may fail to consider some important factors. Part IV then applies these general principles to a series of (hopefully) illuminating examples, including soda and climate change as well as retirement savings, charity, and others.

I.   Regulating Externalities: An Introduction

Modern economic theories of government regulation begin with the premise that markets sometimes fail.[32] Externalities are a classic example.[33] An externality, simply put, is a harm (negative externality) or benefit (positive externality) that affects someone other than the actor making an economic decision.[34]

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30. Prior legal analyses of "sin taxes" have tended to emphasize instead philosophical questions about the government's role in regulation, Gary Lucas, Jr., *Saving Smokers from Themselves: The Paternalistic Use of Cigarette Taxes*, 80 U. CIN. L. REV. 693, 698–742 (2012), or questioned whether government should share in the profits from bad deeds, Andrew J. Haile, *Sin Taxes: When the State Becomes the Sinner*, 82 TEMP. L. REV. 1041, 1053–63 (2009). The substantial literature on the regulation of obesity does already raise some questions about the best methods for regulating but has not yet attempted to compare nudges to more traditional alternatives. *See* E. Katherine Battle & Kelly D. Brownell, *Confronting a Rising Tide of Eating Disorders and Obesity: Treatment vs. Prevention and Policy*, 21 ADDICTIVE BEHAVIORS 755, 762 (1996); Tom Marshall, *Exploring a Fiscal Food Policy: The Case of Diet and Ischaemic Heart Disease*, 320 BRIT. MED. J. 301, 301 (2000); Katherine Pratt, *A Constructive Critique of Public Health Arguments for Antiobesity Soda Taxes and Food Taxes*, 87 TUL. L. REV. 73, 114–39 (2012); Jeff Strnad, *Conceptualizing the "Fat Tax": The Role of Food Taxes in Developed Economies*, 78 S. CALIF. L. REV. 1221, 1294–1322 (2005); Stephen D. Sugarman & Nirit Sandman, *Fighting Childhood Obesity Through Performance-Based Regulation of the Food Industry*, 56 DUKE L.J. 1403, 1429–90 (2007).

31. Chetty et al., *supra* note 14.

32. JONATHAN GRUBER, PUBLIC FINANCE AND PUBLIC POLICY 3 (3d ed. 2011).

33. *Id*. at 123.

34. *Id*. at 124–28.

In general, the goal of regulation is neither to eliminate negative nor to produce boundless quantities of positive externalities but rather to achieve what might be called the optimal level of externality.[35] Eliminating even the worst pollutants is costly.[36] Should government bankrupt coal producers, or is there a way to balance clean air against the costs of achieving it? On the positive externality side, everyone might agree that charity is beneficial. But should government spend millions to clothe or educate one more child?

Economists typically answer these kind of balancing questions using marginal analysis.[37] Under this approach, the policy maker asks herself, "on the margin—that is, for the very next unit of good or bad produced—what is the harm or benefit of that one unit for *everyone in society*?" We might therefore call this the "marginal social damage," (MSD) in the case of a negative externality and "marginal social benefit" (MSB) for a positive one. She then compares this harm or benefit against the marginal costs to the producer. If the producer's private marginal cost is greater than the marginal social damage, it doesn't pay, on net, to prevent the damage: counting the producer's losses, society would lose by forcing the producer to avoid the externality.[38]

To see this graphically, consider Figure 1.

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35. *Id.* at 139; Helfand et al., *supra* note 23, at 253.

36. GRUBER, *supra* note 32, at 122–23.

37. *Id.* at 124.

38. Note, importantly, that for simplicity we are assuming here that we should count the costs and benefits for the producer and everyone else equally. That's a controversial proposition, but I'll leave it aside here for ease of exposition.

Figure 1: Optimal Externality Production
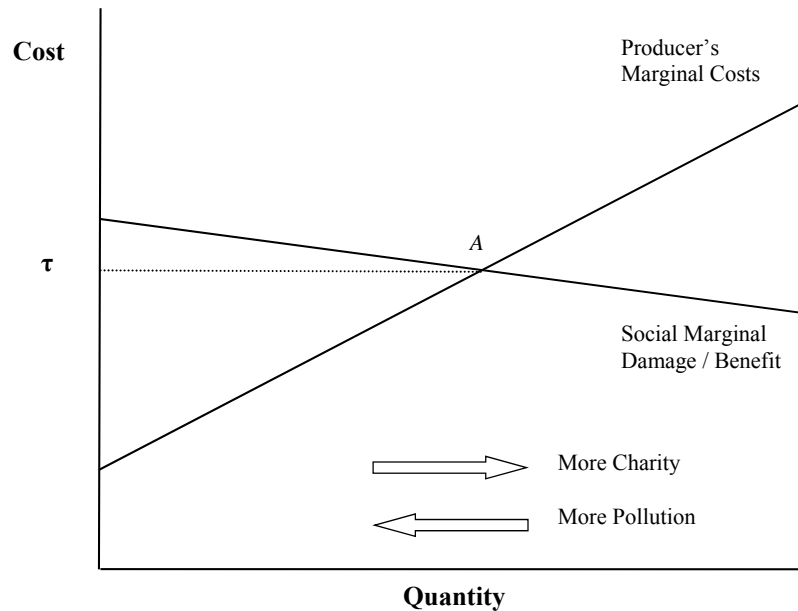
In Figure 1, the upward-sloping line represents the marginal cost curve for the externality producer: as we trace the line rightwards, each additional unit of pollution reduction (say, one ton less of carbon) or charitable output (say, another bed in a homeless shelter) is costlier to achieve.[39]   The downward-sloping line is the marginal social benefit curve: each unit is slightly less beneficial than the last.[40]   At point *A*, the two lines intersect. This is the optimal point.[41]   Anywhere to the right of *A*, the costs of charity or pollution reduction outweigh the benefits. To the left, we've left cost-effective improvements on the table.

We could imagine a few ways of achieving production at this level *A*. If government knew the shapes of the two curves, it could calculate the

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   39. This reflects the likelihood that firms will undertake the cheapest efforts first and then have to work harder and harder to achieve further milestones. For instance, at some point, adding more beds means building a new building.

   40. Again, diminishing marginal utility is a standard assumption here. We probably house the neediest persons first, and at some point we're offering shelter space to Bill Gates.

   41. I'm simplifying here for the sake of exposition. A more rigorous approach to setting the optimal quantity would also account for other factors that might affect the efficiency of the regulation. For example, if the regulation imposes costs, and the expectation of those costs changes behaviors other than the production of the externality—for example, distorts consumer choices among products—the ideal regulation might balance disruption of these expectations against pollution control. *See* Helmuth Cremer et al., *Externalities and Optimal Taxation*, 70 J. PUB. ECON. 343, 346 (1998).

quantity of output at *A* and simply mandate that producers achieve it, with jail for those who refuse.

Another approach is to set a price for producers. In the case of pollution, government could impose a fee or tax on each unit of carbon in an amount equal to the producer's marginal cost at point *A*; this price is labeled *tau* in Figure 1. For producers whose costs of eliminating the next unit of carbon are below *tau*, they will eliminate it, saving themselves *tau* minus their cost. For producers whose costs are above *tau*, they will simply emit the carbon and pay the tax. Thus, just as with the mandate, rational producers should produce exactly the amount of carbon at point *A*. Or, similarly, government could pay producers to eliminate carbon or produce charity. Once more, if the government offers a price *tau*, only producers who can fill a shelter bed for less than *tau* will take the offer.

Economists often call the first of these approaches "quantity regulation"[42] and the second two "price instruments."[43] Lawyers may be more familiar with the similar divide between what Calabresi and Melamed termed "property rules" and "liability rules."[44]

Most commentators strongly favor price instruments over quantity regulation, except in settings where special administrative considerations make prices impractical.[45] As Kaplow and Shavell show, prices can be used to duplicate most of the features of mandates.[46] Prices provide vital information to the government that regulation supposedly does not, as we'll see in more detail shortly.[47] Further, prices are said to provide for revenues that the government can use for other projects, while regulations do not.[48]

Glaeser's critique of nudges and similarly novel behavioral forms of regulation is typical in this regard. Glaeser argues that both taxes and nudges create economic distortions, but only taxes bring in money to help

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42. GRUBER, *supra* note 32, at 140.

43. THOMAS STERNER, POLICY INSTRUMENTS FOR ENVIRONMENTAL AND NATURAL RESOURCE MANAGEMENT 148, 214–15 (2003).

44. Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092 (1972); *see also* Louis Kaplow & Steven Shavell, *Property Rules Versus Liability Rules: An Economic Analysis*, 109 HARV. L. REV. 713, 715 (1996).

45. GRUBER, *supra* note 32, at 140; Maureen L. Cropper & Wallace E. Oates, *Environmental Economics: A Survey*, 30 J. ECON. LITERATURE 675, 686 (1992); Don Fullerton et al., *Environmental Taxes*, *in* DIMENSIONS OF TAX DESIGN: THE MIRRLEES REVIEW 423, 429 (James Mirrlees et al. eds., 2010); Cameron Hepburn, *Regulation by Prices, Quantities, or Both: A Review of Instrument Choice*, 22 OXFORD REV. ECON. POL'Y 226, 228–29 (2006). As an example of a special consideration, price instruments may be riskier than quantity regulation when the marginal social damage curve is steep but its exact shape is uncertain, GRUBER, *supra* note 32, at 143–46, and the policy maker cannot sharply vary the tax rate to account for this risk.

46. Louis Kaplow & Steven Shavell, *On the Superiority of Corrective Taxes to Quantity Regulation*, 4 AM. L. & ECON. REV. 1, 7–10 (2002).

47. *Id.* at 4.

48. *E.g.*, Helfand et al., *supra* note 23.

offset those losses.[49] Perhaps graphic images of the harms of cigarette smoking printed on the sides of packs would be repulsive enough that the smokers switch to cigarillos or pipe tobacco, which are nearly as harmful but which they enjoy less. Or perhaps some smokers cannot quit, but also suffer added pain as a result of the imagery.[50] Further, unlike a cigarette tax, the graphic images don't bring in any revenues that could be used to improve the lives of smokers or anybody else. To take another example, workers who are defaulted into a savings program, who are unwilling to pay the costs of the opt-out mechanism, and who genuinely would prefer not to save are worse off than in the absence of the nudge.[51] A number of other economists have recently made a similar point about the preferability of a carbon tax over other regulatory alternatives: regulations change consumption patterns, creating deadweight loss, but bring in no offsetting dollars.[52]

Glaeser's point echoes a much older debate over the most efficient form of punishment for crimes. Becker, and later Polinsky and Shavell, have argued that in many situations fines are superior to imprisonment.[53] Both reduce the utility of the offender. The fines, though, can be used to transfer that loss to someone else, resulting in greater overall social welfare.[54]

Over the remainder of the Article I want to first flesh out, and then question, many of these well-established assumptions about the superiority of prices to other regulatory alternatives. As we'll see, some long-standing claims may not hold up to close scrutiny, especially once we factor in some of the unique aspects of the newest regulatory alternatives.

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49. Glaeser, *supra* note 20, at 135, 150; *see also* Lucas, *supra* note 30, at 726–30 (observing that optimal cigarette tax rates differ from person to person because of heterogenity among smokers); Mitchell, *supra* note 19, at 1268, 1274 (explaining that the cost of increasing benefits to irrational persons will often be borne by rational ones); Rizzo & Whitman, *supra* note 18, at 960–61 (discussing problems of over- and under-inclusion that arise under one-size-fits-all tax models).

50. Andrew Caplin, *Fear as a Policy Instrument, in* TIME AND DECISION: ECONOMIC AND PSYCHOLOGICAL PERSPECTIVES ON INTERTEMPORAL CHOICE 441, 442, 452 (George Loewenstein et al. eds., 2003); *see* Lee Anne Fennell, *Willpower Taxes*, 99 GEO. L.J. 1371, 1415 (2011) (making this point about imperfectly targeted nudges generally).

51. *See* Jeffrey J. Rachlinski, *Cognitive Errors, Individual Differences, and Paternalism*, 73 U. CHI. L. REV. 207, 224–25 (2006); *cf.* Schlag, *supra* note 16, at 917 (noting that nudges may have more dramatic effects on behaviors than command-and-control regulation).

52. Helfand et al., *supra* note 23, at 287; Ian W.H. Parry et al., *When Can Carbon Abatement Policies Increase Welfare? The Fundamental Role of Distorted Factor Markets*, 37 J. ENVTL. ECON. & MGMT. 52, 52 (1999); *see also* Ian Ayres, *Regulating Opt-Out: An Economic Theory of Altering Rules*, 121 YALE L.J. 2032, 2091 (2012). However, Ayres also notes the potential targeting advantages of using what he calls "sticky defaults." Ayres, *supra*, at 2091–92.

53. Becker, *supra* note 22, at 193–99; Polinsky & Shavell, *supra* note 22, at 407–20.

54. Becker, *supra* note 22, at 180; Polinsky & Shavell, *supra* note 22, at 408. Becker credits an early version of this point to Bentham. Becker, *supra* note 22, at 193 n.40.

II. Policy Instruments in Three (or More) Dimensions

In order to assess the new evolving set of policy tools, it may be useful to situate them in the context of more familiar mechanisms. The new tools, I'll argue, share many features in common with those we already know. To see those features and how they interact, in this Part I'll attempt to break down the potential policy toolkit into its component parts. Since each part has distinctive features—adds to the treasury or draws from it, redistributes funds or doesn't, and so on—when we rebuild our tools from their components we'll be better able to see the consequences of the tool we choose. Other authors have made some of these distinctions before, so not all the components will be wholly new. But the overall picture, and its lessons, are novel.

A. Price vs. Quantity and Refinements

As we just saw, the distinction between price instruments and quantity regulation is a fundamental divide. In the simplest terms, price instruments are usually distinguished by the fact that they involve money transfers. They can include measures familiar from first-year law courses, such as tort liability, as well as sin taxes, sometimes called "Pigouvian" taxes after the economist most strongly associated with them.[55] So, for example, speed and blood-alcohol limits are common quantity regulations aimed at the dangers of the road, while tort lawsuits and tolls are price instruments aimed at the same problem.

Though the price/quantity dichotomy is widely accepted, and appears in virtually any textbook on the economics of regulation,[56] it's overly simplistic in a couple of different ways. Most importantly for my purposes, it collapses what ought to be four categories into just two. Once more, an archetypical price does two things that regulations usually don't: prices reveal information about the subjective valuation of the party who chooses to pay, and they result in the transfer of resources from one party to another.[57] As we saw, both these differences have important policy implications.

With some reflection, though, we can see that not all transfers reveal information, nor do all prices result in net transfers. Eminent domain without compensation provides an example of the first: the government takes title to property from a private landowner and gives it to someone else. While the government can perhaps investigate the subjective cost of the taking for the original landowner, the taking itself does nothing to reveal

55. GRUBER, *supra* note 32, at 135.

56. *E.g.*, *id.*

57. *See supra* text accompanying notes 46–54.

the landowner's preferences. Replevin and specific performance are other familiar examples.

Rebates supply an instance of prices without transfers. Suppose that we impose a soda tax and then rebate the proceeds equally to each household. Families that consume the household average amount of soda will be no richer or poorer than they were before. But each individual retains a *marginal* incentive to cut back on pop because if they consume more than average they will lose money on net. Each additional cup still costs an extra nickel or dime. In effect, we can observe the strength of people's preferences without transferring much between them. Louis Kaplow extends this idea, proposing that all regulation should be evaluated as if it were enacted together with a perfectly offsetting tax or rebate; under his scheme, all prices are on net transferless.[58]

Therefore, I'll subdivide the price/quantity categories. We have policies that transfer value and those that are what I'll call "transferless." And then we have policies that reveal information about subjective cost or valuation, which we can call "price," and those that don't, which I'll just call "priceless."

B.   *Public vs. Private*

If policy instruments transfer value, it may be important to know who are the winners and losers. To simplify a bit, I'll call the two main possibilities "private" and "public." Tort proceeds are paid directly to victims, while tax revenues usually end up in the public fisc. There can also be middle ground between the two categories. If tort awards are subject to an income tax, then a portion of the judgment ends up in public hands. Sin taxes may be set aside for the benefit of a particular group, as in the case of the federal gasoline tax, which is mostly used for road improvements.[59] In the case of carrots, we can think of "public" and "private" as the question of who pays, rather than who benefits.[60] For instance, patents resemble tax credits for research and development, but the

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58. LOUIS KAPLOW, THE THEORY OF TAXATION AND PUBLIC ECONOMICS 13–34 (2008). I do not disagree, and even agree that such perfect offsets might often be theoretically ideal. My goal is only to consider the second-best outcomes in the absence of optimal offsets. That is, I analyze the implementation of the price instrument in isolation from any such offsets, which so far have not been observed in practice.

59. STAFF OF JOINT COMM. ON TAXATION, 111th CONG., JCS-I-II, PRESENT LAW AND BACKGROUND INFORMATION ON FEDERAL EXCISE TAXES 2–10 (Joint Comm. Print 2011), *available at* https://www.jct.gov/Publications.html?func=startdown&id=3721.

60. That is not to say that governments cannot be subject to carrots and sticks. But that subject deserves more detailed treatment than I can offer here.

costs of the patent are borne mostly by consumers, while tax credits empty public coffers.[61]

Allocating winners and losers can dramatically affect both the economics and politics of a policy as prior commentary has recognized.[62] Economically, in most cases, it is more efficient to spread the costs of a policy as widely as possible.[63] Whether labeled a "tax" or not, the costs of paying for someone else's benefits distort our behavior, and the welfare loss from that distortion grows exponentially.[64] To see why, think of a $1 tax on iPhones. Not many people will switch to Android for $1, and those that do really did not value Apple very highly, anyway. At a $50 tax, many people are switching, and now we are changing the behavior of people who were deeply bonded with Siri. And yet, the government raises not a dollar from anyone who switches, which is why economists term the distortion "deadweight loss." If we can spread the cost of a policy across more payors, we can lower the costs each of them face, reducing deadweight losses.

Transfers also have important effects on incentives. For instance, we may prefer that fines be paid to the public, rather to the victims of crimes, in order to give victims the correct set of incentives to mitigate the harm they suffer.[65] As we will see, many commentators assume that carrots give potential beneficiaries incentives to start doing bad deeds, so that they will be paid to stop. But as I have pointed out elsewhere, that is less true if it turns out that the beneficiaries also mostly pay for their own carrots.[66]

Transfers are not the only way a policy can be public or private. The power to initiate an enforcement action, control over how it proceeds, the costs of administering and enforcing it—all these can be divided between public and private. These factors are significant at times, as well; "corrective justice" tort scholars point to private control, rather than the recipients of the money judgment, as a key feature of the tort system.[67]

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61. *See* Michael Abramowicz, *Perfecting Patent Prizes*, 56 VAND L. REV. 115, 200–07 (2003); Nancy Gallini & Suzanne Scotchmer, *Intellectual Property: When Is It the Best Incentive System?*, *in* 2 INNOVATION POLICY AND THE ECONOMY 51, 54 (Adam B. Jaffe et al. eds., 2002).

62. For a review, see Galle, *supra* note 27, at 809–12, 840–45.

63. *See* A.B. Atkinson & J.E. Stiglitz, *The Design of Tax Structure: Direct Versus Indirect Taxation*, 6 J. PUB. ECON. 55, 55–64 (1976) (explaining benefits of uniform, broad-based taxation).

64. *Id.* at 56 (arguing that basing a tax on characteristics under the control of an individual will distort the economy).

65. Kaplow & Shavell, *supra* note 44, at 738; Donald Wittman, *Liability for Harm or Restitution for Benefit?*, 13 J. LEGAL STUD. 57, 67–68 (1984).

66. Galle, *supra* note 27, at 826–27.

67. *See, e.g.*, John C.P. Goldberg, *The Constitutional Status of Tort Law: Due Process and the Right to a Law for the Redress of Wrongs*, 115 YALE L.J. 524, 532–58 (2005) (arguing that the basis of tort law is private property rights and the notion that individuals have personal rights to be redressed).

Private control over a nudge regime might complicate regulatory goals.[68] For the most part, though, I will not examine those questions closely here.

C.   Stick vs. Carrot

Once policy makers decide to rely on a price instrument, they have a choice between rewarding or penalizing, between carrots and sticks. Both options have similar effects on the marginal incentives of externality producers.[69] Whether producers are rewarded, or nonproducers fined, giving an additional dollar saves donors money relative to not giving.[70] Each instrument can be priced so that the marginal cost of an additional unit of production is equal to the marginal damage suffered by society, so that in effect the producers internalize the full social cost of their decision.[71] However, the two mechanisms vary in a number of other important ways. As I have described before, which option is the better choice for a particular policy depends largely on these other factors.[72]

Sticks are, except in unusual circumstances, the more efficient tool for reining in the social overproduction of some negative-externality-laden good.[73] Sticks earn the government money, while carrots drain the treasury, wasting hard-won tax revenues.[74] Revenue is critical because raising taxes is costly: in addition to paying the tax, many people will also change their behavior to minimize taxes, causing deadweight loss.[75] In addition, carrots give producers more resources to create the unwanted good. Similarly, in many cases, as individuals get wealthier, they demand more of the undesirable product, a phenomenon known as the "income effect."[76] Carrots are also wasteful if producers plan to cut back on their activities anyway. And overproducers who know they will be paid to curtail their activities in the future have an incentive to begin overproducing, while the opposite is true of sticks.

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68. Michael S. Barr et al., *The Case for Behaviorally Informed Regulation*, in NEW PERSPECTIVES ON REGULATION 27, 35–39 (David Moss & John Cisternino eds., 2009).

69. Helfand et al., *supra* note 23, at 277–78.

70. *Id.* at 278.

71. *Id.*

72. Galle, *supra* note 27, at 809–13. For a complementary framework that sometimes reaches different conclusions from mine, see Gerrit De Geest & Giuseppe Dari-Mattiacci, *The Rise of Carrots and the Decline of Sticks*, 80 U. CHI. L. REV. 341, 360–73 (2013).

73. For development of the points in this paragraph, see Galle, *supra* note 27, at 813–31.

74. The revenue benefit of sticks depends, however, on some assumptions about how the revenues are deployed. A. Lans Bovenberg & Lawrence H. Goulder, *Environmental Taxation and Regulation*, in 3 HANDBOOK OF PUBLIC ECONOMICS 1471, 1497–507 (Alan J. Auerbach & Martin Feldstein eds., 2002). For development of this point, see *infra* section III(B)(1).

75. GRUBER, *supra* note 32, at 591–601.

76. *Cf. id.* at 36 (defining income effect as higher prices causing a consumer to buy less when all else is held constant). For example, poorer commuters may take the bus, while richer ones may prefer to drive.

In contrast, carrots are more defensible for encouraging the production of a good with positive externalities, where we would expect social underproduction.[77] In that case, the fact that carrot recipients have more resources is desirable, since we want them to produce or demand more of the good.[78] On the other hand, it is still the case that the expectation of future carrots has unwanted incentive effects, encouraging producers to delay producing the good until the government agrees to pay them. And carrots remain costlier, especially when factoring in the possibility that some might altruistically produce the good without subsidy. So though carrots are less clearly dominated by sticks in the positive externality setting, there remains a question whether they are worth the cost.

Let me emphasize the limits of what this "choice of instruments" kind of analysis can accomplish. The goal is to measure the relative efficacy of each choice, given an arbitrary baseline: our world looks like this, what should we do now? So the claim is not that sticks are always efficient, only that they are usually *more* efficient than carrots, all else equal.[79]

D.   Ex ante/Ex post

Another potentially important policy dichotomy is the timing of the policy lever, though I will not emphasize it much here because its parameters are already well explored in the literature.[80] Some incentives pay off before the externality producer acts, and some take effect afterwards. For example, zoning laws restrict development before it results in unwanted burdens on neighbors, while nuisance suits impose liability after the damage has begun.

In many cases time is irrelevant. As any 1L knows, *ex post* liability regimes like tort and criminal law assume that rational actors will take account of their expected future costs when planning their behavior.[81] So *ex post* is effectively the same as *ex ante*, at least for rationally-forward-

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77. *Id.* at 43–53 (noting that an unregulated market tends to underproduce goods with positive externalities).

78. Galle, *supra* note 27, at 832.

79. *See* Helfand et al., *supra* note 23, at 270 (noting that a goal of economic analysis is usually to identify the welfare effects of a policy in comparison to its alternatives); *cf.* Daniel Shaviro, *The Minimum Wage, the Earned Income Tax Credit, and Optimal Subsidy Policy*, 64 U. CHI. L. REV. 405, 415 (1997) (explaining that departures from the status quo can be analyzed without attributing any special normative status to existing rules).

80. For more extensive treatment, see Brian Galle, *Myopia, Fiscal Federalism, and Unemployment Insurance: Time to Reform UI Financing* 5–18 (Bos. Coll. Law Sch., Legal Studies Research Paper No. 265, 2012), *available at* http://ssrn.com/abstract=2031728.

81. Christine Jolls, *On Law Enforcement with Boundedly Rational Actors*, *in* THE LAW & ECONOMICS OF IRRATIONAL BEHAVIOR 268, 272 (Francesco Parisi & Vernon L. Smith eds., 2005).

looking actors.[82]   Information, myopia, and liquidity concerns can all disrupt this equivalence.[83]

E.   A Summary So Far

By this point we already have many of the tools we need to compare, say, soda taxes against the New York beverage limits. We now see that many of the criticisms of the limits are really complaints that New York chose a priceless, transferless, and mostly private policy over a priced, public transfer. More generally, we can describe many policy instruments as a combination of the factors we've seen, as in Figure 2. Figure 2 actually does not depict the *ex ante/ex post* dimension, but readers can think of this page as the *ex ante* boxes, and then simply don their imaginary 3-D glasses and picture an identical set of boxes extending into the third dimension to represent *ex post*. The examples given, though, mix *ex ante* and *ex post*.

Figure 2: Components of Conventional Policy Instruments

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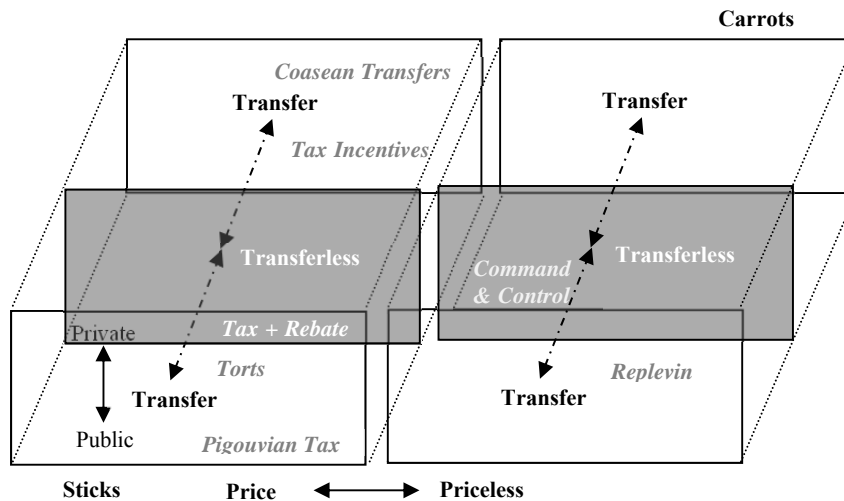
82. Of course, time is money, so *ex post* liability must be greater at the time it is imposed than a comparable *ex ante* incentive, such as a Pigouvian tax; the present discounted value of each alternative should be identical *ex ante*.

83. Galle, *supra* note 80, at 15–18.

F.   The New Regulation: Nudges, Defaults, and "Surprising" Effects

While we have seen much of the story, there remain important senses in which something like New York's soda policy differs from traditional regulation. As readers likely know, Sunstein and Thaler call these kinds of policies "nudges," and offer a long list of examples; for instance, they suggest painting roads to encourage more cautious driving and if that fails making organ donation the default choice on drivers' licenses.[84]

1. What's a Nudge?—For Sunstein, Thaler, and other proponents, two factors distinguish their ideas from more familiar approaches: nudges are policies whose effects are "surprising" and "asymmetric."[85] For example, classic rational-choice economic theory predicts that the default savings rate chosen by our employers should not affect how much we choose to save for retirement. Filling out a sheet of paper to change our plan takes ten minutes, and might be worth tens of thousands of dollars in the long term. Yet much evidence suggests that defaults matter a great deal: that is the surprising part.[86] The "asymmetry" is that the impact of the form is not uniform; some people are much more affected by having to fill out a form than others.[87]

A nudge, then, replaces traditional motivators, such as cash or jail time, with surprising and asymmetric incentives.   If we know that individuals are slow to switch away from a default choice initially made for them, government can use defaults in place of commands.[88]   Similarly, minor obstacles such as having to fill out a form or wait in a line can, at times, replace prescriptive regulation.[89] To the extent that the framing and presentation of information influences how we choose, government can

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84. *See* THALER & SUNSTEIN, *supra* note 8, at 83–102, 172–84, 231–39, 257–68. See Russell Korobkin, *Libertarian Welfarism*, 97 CALIF. L. REV. 1651, 1662–64 (2009), for a pithy summary of the available tools.

85. *See* THALER & SUNSTEIN, *supra* note 8, at 85–86, 252–54; Camerer et al., *supra* note 17, at 1222 (arguing that paternalistic policies are justified when there is asymmetric information).

86. Shlomo Benartzi & Richard H. Thaler, *Heuristics and Biases in Retirement Savings Behavior*, J. ECON. PERSP., Summer 2007, at 81, 83–84.

87. *See id.* at 100–01; Chetty et al., *supra* note 14 (manuscript at 37–38).

88. Nudge proponents have mostly focused on internalities, but some scholars have extended their work to externalities or other regulatory goals as well. *See, e.g.*, Ayres, *supra* note 52, at 2086 (arguing that nudges can be used in the context of negative externalities); Anuj C. Desai, *Libertarian Paternalism, Externalities, and the "Spirit of Liberty": How Thaler and Sunstein are Nudging Us Toward an "Overlapping Consensus,"* 36 LAW & SOC. INQUIRY 263, 270 (2011) (discussing choice architecture in the context of negative externalities); Korobkin, *supra* note 84, at 1653 (stating that nudges can be used in the context of public goods by encouraging greater production of public goods); Matthew A. Smith & Michael S. McPherson, *Nudging for Equality: Values in Libertarian Paternalism*, 61 ADMIN. L. REV. 323, 335–39 (2009) (urging the use of the nudge concept to promote equality).

89. Brian Galle & Manuel Utset, *Is Cap-and-Trade Fair to the Poor? Shortsighted Households and the Timing of Consumption Taxes*, 79 GEO. WASH. L. REV. 33, 84–87 (2010).

influence the public towards more desirable outcomes without the need for law enforcement.[90]

These two features have important normative bite for nudge proponents. They argue that the objective burdens of overcoming a nudge in many cases are small.[91] Of course, in the moment that individuals face the nudge—when they are waiting on hold as *The Girl from Ipanema* plays tinnily through their phone's speaker—its costs appear too large to bear. So the claim that nudges are different depends partly on an assumption about the proper measure of individuals' utility: evidently we should count costs and benefits according to the perspective the individual would take in a temporally remote, "reflective" setting.[92] Seen from this point of view, the cost of waiting on the phone for a few minutes should look tiny.

Secondly, and less controversially, nudges differ from standard regulation in their ability to more closely approximate people's real preferences. Traditionally, critics of regulation have claimed that uniform government rules aimed at correcting people's own mistakes will necessarily impose a one-size-fits-all regime, forcing some people to change for the worse.[93] Social security, for instance, can be criticized as a form of forced savings that may reduce the subjective welfare of those who prefer to consume all their income immediately.[94]

Nudge defenders argue that asymmetry mitigates this problem because those who feel strongly about their own choices can easily overcome the government's default.[95] Although defenders acknowledge that for some people nudges can be hard to overcome, they suggest that asymmetric regulation is most defensible in those cases where the personality traits that make nudges tough to fight are the same traits that produce the behaviors the government is combating.[96] Impatient people won't opt out of default savings plans, but the impatient are also the most likely to be saving too

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90. Camerer et al., *supra* note 17, at 1230–37.

91. THALER & SUNSTEIN, *supra* note 8, at 252–54; Camerer et al., *supra* note 17, at 1219, 1222; *see also* Ayres, *supra* note 52, at 2087 (describing costs of sticky defaults as "intermediate" between commands and free contract).

92. THALER & SUNSTEIN, *supra* note 8, at 12; Sunstein & Thaler, *Libertarian Paternalism*, *supra* note 17, at 1191. A more developed version of this argument is Eyal Zamir, *The Efficiency of Paternalism*, 84 VA. L. REV. 229, 237–84 (1998). *But cf.* Camerer et al., *supra* note 17, at 1253–54 (suggesting that nudges are preferable to traditional paternalistic regulation because of "uncertainty" about whether consumer choices are really mistakes).

93. *See, e.g.*, Richard A. Epstein, Exchange, *The Neoclassical Economics of Consumer Contracts*, 92 MINN. L. REV. 803, 806–07 (2008); Rizzo & Whitman, *supra* note 18, at 909–10.

94. Theodore R. Groom & John B. Shoven, *Deregulating the Private Pension System*, *in* THE EVOLVING PENSION SYSTEM 123, 126 (William G. Gale et al. eds., 2005).

95. Ayres, *supra* note 52, at 2091–92; Camerer et al., *supra* note 17, at 1222.

96. Camerer et al., *supra* note 17, at 1225–26; *see also* Allcott et al., *supra* note 12, at 2, 23 (discussing the correlation between susceptibility to defaults and propensity to suffer harm).

little.   Therefore, even if nudges *are* costly for some people, these are generally the people who on net benefit from that cost.[97]

    While prior nudge proposals generally do not rely on dollars, we can also imagine some surprising price instruments. When the metro D.C. area adopted a five-cent tax on plastic grocery bags, grocery-bag usage plummeted.[98]   Consumers switched to alternatives that often were more expensive than plastic, even after accounting for the five-cent savings.[99] So it seems that it was not price alone that made the "bag tax" so effective. Commentators suggest that the tax might have provided new information to consumers about the harms of plastic bags.[100] Or it might have triggered a "norms cascade" in which it became shameful to be one of *those* people— the people who did not care about whether their trash would strangle a hapless sea bird.[101] Other monetary incentives may be especially effective because of the way they are timed and framed.[102]

    In short, it seems as though we could expand our earlier set of boxes to include the possibility of surprising forms of any kind of policy tool. I illustrate this expanded universe with Figure 3, below. For some combinations, real-world examples are scarce, suggesting some new frontiers of policy experiments.

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97. Camerer et al., *supra* note 17, at 1222.

98. Tatiana A. Homonoff, Can Small Incentives Have Large Effects? The Impact of Taxes Versus Bonuses on Disposable Bag Use 3, 6 (Mar. 27, 2013) (unpublished manuscript), *available at* https://appam.confex.com/appam/2013/webprogram/Paper6746.html.

99. *Id.*

100. *Id.*

101. *Cf.* Cass R. Sunstein, *Social Norms and Social Roles*, 96 COLUM. L. REV. 903, 947–50 (1996) (explaining the concept of norms cascade and the potential government role in it).

102. AYRES, *supra* note 8, at 43, 53; *see* Kevin C. Volpp et al., *Financial Incentive-Based Approaches for Weight Loss*, 300 J. AM. MED. ASS'N 2631, 2636 (2008) (describing "supercharged" financial incentives).

Figure 3: Components of Policy Instruments

Carrots

Transfer

Transfer

Tax Incentives

Transferless

Transferless

Command & Control

Private   *Tax + Rebate*   Private

Tort

Transfer   Transfer

Replevin

Public   *Pigouvian Tax*   Public

Unsurprising   Sticks   Price   Priceless

Surprising   Carrots

Prizes   *Warm Glow*

Transfer   Transfer

Lotteries

Pension Defaults

Transferless   *Soda Size Limit*   Transferless

Private   Private

Transfer   Transfer

Public   *The Bag Tax*   Public

Sticks

2. Why Do Nudges Work?—In order to do any serious policy analysis of surprising instruments, we'll need to understand what makes them effective. As I'll show in a bit, the psychological mechanisms that underlie different forms of nudge can translate into sharply varying social welfare implications for their widespread usage.

Nudges depend on humans' psychological foibles. Data show that we are overwhelmingly creatures of the present, and only through exercises of our limited pool of willpower can we force ourselves to take sufficient account of the future.[103] Relatedly, we tend to focus our attention on facts

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103. For overviews of the literature, see Fennell, *supra* note 50, at 1375–94, and Shane Frederick et al., *Time Discounting and Time Preference: A Critical Review*, *in* ADVANCES IN BEHAVIORAL ECONOMICS 162, 166–79 (Colin F. Camerer et al. eds., 2004).

that are readily available to us or on items in plain sight, reacting automatically and emotionally to those immediate stimuli—mental processes Kahneman calls "system one."[104] Only with some effort do we turn our attention to the distant and the hidden, and engage our reasoning powers—Kahneman's "system two"—to reach better decisions.[105] We "anchor" on information we've already received and interpret new data selectively to fit with what we already know or want to be true.[106] In all of these areas evidence demonstrates that individuals vary considerably in their susceptibility to the behavior.[107]

These tendencies form the backbone of most surprising interventions. For instance, scholars who have studied "sticky defaults" argue that defaults are surprisingly persistent because many of us assign too much weight to the present burden of having to ponder finances and too little weight to the distant future benefits of savings.[108] Thus, policy makers who want to encourage savings by those who are "impatient" in this way can encourage employers to set the default to a high level of savings, rather than the prevailing zero or very low levels.

Other interventions employ our tendency to rely on system one processes. Choice architecture, for instance, aims to present us with options that we will find instinctively appealing.[109] New York City's new Active Design Guidelines are a literal example, encouraging builders to make stairs easy to find and elevators difficult, so as to encourage workers to climb to their offices.[110] Sunstein and Thaler mention Chicago's use of lines on the street to make drivers feel they are driving too fast and to reflexively slow down.[111]

New York's beverage limits draw on both impatience and attentiveness. Many studies show that consumers tend to eat or drink whatever is in front of them.[112] In one famous study, researchers found that consumers will eat as much soup as it takes to empty their bowl, even if the researchers are secretly pumping more soup into the bottom.[113] Items

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104. Daniel Kahneman, *Maps of Bounded Rationality: Psychology for Behavioral Economics*, 93 AM. ECON. REV. 1449, 1451–57 (2003).

105. *Id.* at 1467–69.

106. JONATHAN BARON, THINKING AND DECIDING 203–24 (4th ed. 2008).

107. Ted O'Donoghue & Matthew Rabin, *Self-Awareness and Self-Control*, *in* TIME AND DECISION: ECONOMIC AND PSYCHOLOGICAL PERSPECTIVES ON INTERTEMPORAL CHOICE 217, 218–20 (George Loewenstein et al. eds., 2003).

108. Benartzi & Thaler, *supra* note 86, at 99–100 (pointing to evidence that education failed to change savings rates but that willpower-focused interventions did).

109. THALER & SUNSTEIN, *supra* note 8, at 3.

110. NYC CENTER FOR ACTIVE DESIGN, ACTIVE DESIGN GUIDELINES 70–81 (2010), *available at* http://www.nyc.gov/html/ddc/html/design/active_design.shtml.

111. THALER & SUNSTEIN, *supra* note 8, at 37–39.

112. See sources cited *supra* note 10.

113. WANSINK, *supra* note 10, at 47–52.

placed in front of us are more tempting, and more immediately available to our mind, than the distant benefits of restraint.[114] The burden of going back for another serving also triggers our tendency to put off future benefits, and since impatience is correlated with obesity,[115] this burden is largest for those who are most likely to overconsume. New York's nudge is to shrink the portion size, which should thereby also diminish consumption.

Importantly for my later analysis, evidence so far also suggests that some of us are more self-aware of our psychological failings than others. Consider the example of the mutual bank. Mutuals offer credit cards with relatively higher interest rates but promise "no hidden fees."[116] That combination of features seems most plausibly aimed at customers who know their own tendency to fall for the tricks played by other banks.[117] Mutuals command a small sliver of the credit market, however.[118] Similarly, many households report that they let the government keep too much in tax withholding each year so that they will not face the temptation to spend that money too soon—and then, ironically, some of these same households later pay very high fees to get access to their money a few weeks early.[119] Though other interpretations are possible, a reasonable inference is that our understanding of our own frailty, even if present, is often imperfect.

III. Choosing the Best Instrument

We're now fully prepared to compare a wide array of different policies. Again, most scholars so far agree that what they call price instruments—what in Figure 3 would fall into the stick–price–transfer boxes—dominate other options.[120] In this Part, I will argue that several of the presumed advantages of transfers and prices may be less important than has previously been understood.[121] While in some cases my claim depends

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114. *See id.*

115. *E.g.*, Shinsuke Ikeda et al., *Hyperbolic Discounting, the Sign Effect, and the Body Mass Index*, 29 J. HEALTH ECON. 268, 268 (2010); Charles J. Courtemanche et al., *Impatience, Incentives, and Obesity* 17–26 (Nat'l Bureau of Econ. Research, Working Paper No. 17483, 2011), *available at* http://www.nber.org/papers/w17483.

116. Ryan Bubb & Alex Kaufman, *Consumer Biases and Mutual Ownership*, 105 J. PUB. ECON. 39, 45–50 (2013).

117. *Id.* at 48.

118. *Id.* at 45.

119. Michael S. Barr & Jane K. Dokko, *Third-Party Tax Administration: The Case of Low- and Moderate-Income Households*, 5 J. EMPIRICAL L. STUD. 963, 971–78 (2008).

120. Glaeser, *supra* note 20, at 150; *see also* sources cited *supra* note 52.

121. For simplicity's sake, when describing the effects of price instruments I mostly assume here that individuals respond rationally to the instrument. Obviously that is not necessarily so, especially in the internality context. For discussion of price instruments with irrational agents, see Brian Galle, *Carrots, Sticks, and Salience*, 66 TAX L. REV. (forthcoming 2014) *available at* http://lawdigitalcommons.bc.edu/lsfp/493/, and Garth Heutel, *Optimal Policy Instruments for Externality-Producing Durable Goods Under Time Inconsistency* (Nat'l Bureau of Econ.

on the potentially surprising nature of some transferless and priceless instruments, in other cases even conventional regulation is a better option than economists suggest.

A. Prices or Priceless?

Once more, commentators argue that price instruments best their priceless competitors by providing better information.[122] In particular, from a societal standpoint we would like to pay the least possible to get to the right level of externalities, but it's hard to know how to do that. For example, if Grungefirm can cut the first unit of emissions for $100, and Sparklefirm can clean up for only $80, it makes more sense to ask Sparkle first.[123] The problem is that government usually doesn't know the marginal cost of cleanup for each firm. Each firm has strong incentives to hide its capacity; if Sparkle can fool society into demanding reductions from Grunge instead, it saves $80. The opposite is true if we promise rewards for clean production: there, each firm wants to pretend to be the cheapest, rather than the costliest.[124]

Prices give externality producers incentives to reveal their private cost structure.[125] If we set taxes at $81 per unit of pollution, then Sparkle will spend $80 to clean up, saving $1. Grunge keeps polluting. Assuming that each is operating rationally, we can infer that Sparkle's marginal costs are less than $81 and Grunge's are more.[126] Same thing if we offer a bonus: if Sparkle accepts an $81 reward for reducing emissions, it must be the case that it costs Sparklefirm less than that to clean up its act.

This account has two potential flaws, one sketched previously by Jacob Nussim and another I'll lay out for the first time here. Nussim suggests that price instruments do not actually economize on information because they fail to reveal information about the least-cost avoider.[127] I'll

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Research, Working Paper No. 17083, 2011), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1854185.

122. *See, e.g.*, Fullerton et al., *supra* note 45, at 430.

123. If the marginal cost of cleanup is increasing, as seems likely to be the case, then at some point it will become cheaper to switch to Grunge. At equilibrium, the marginal costs of remediation should therefore be equal at all firms. Any other result produces unnecessary social costs. Robert Stavins, *Environmental Economics*, *in* THE NEW PALGRAVE DICTIONARY OF ECONOMICS 882, 882–83 (Steven N. Durlauf & Lawrence E. Blume eds., 2d ed. 2008).

124. Competitive bidding is one classic solution to this problem, but that route has many complications, as well. JEAN-JACQUES LAFFONT & JEAN TIROLE, A THEORY OF INCENTIVES IN PROCUREMENT AND REGULATION 307–40 (1993).

125. *See* Kaplow & Shavell, *supra* note 46, at 4.

126. Of course, firms that are aware of the government's strategy can strategically conceal information. See Galle, *supra* note 27, at 822–23, 826–27, for discussion of that scenario.

127. *See* Jacob Nussim, Information Costs of Externality-Control Instruments 7–10 (Dec. 9, 2013) (unpublished manuscript), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2395152.

add that, even if price instruments do reveal all the information the regulator needs, in many cases priceless instruments could do just as well.

Nussim's point depends on the argument, familiar from tort theory, that sometimes it is victims who should change their behavior, not injurers. If the farmer can move her grain away from the fiery train tracks at a cost of only $50, while it would cost millions to relocate the tracks, society is better off if the farmer has to move (setting aside distributive considerations).[128] Thus the correct price for a price instrument is not, in our earlier terms, the marginal social damage but rather the lesser of the marginal social damage or the victim's cost of avoiding that damage.[129] If the price for the instrument is set at MSD, we won't learn much about victims' costs; those who can avoid the harm for less than the damage they suffer will do so, but we don't know *how much* less it costs them.

Kaplow and Shavell suggest, albeit fairly indirectly, a possible answer, though their focus is on the costs of injurers, not victims.[130] Suppose that instead of jumping directly to MSD, the government slowly phases in its new penalty over time. We then can observe the behavior of victims as the price changes. Do victims avoid injury when the damage to them is $40?[131] When it's $60? When it's $110? Nussim emphasizes that his argument is for the "static" case,[132] and perhaps this is why: in a dynamic setting, the policy maker can experiment with different values, and use the resulting observations to infer both producer and victim cost schedules.

If that is true, however, it implies that the government need not rely on price instruments. Or, more precisely, once the government has used price instruments *experimentally*, it can then switch to priceless regulation. What if the priceless instrument is superior in all respects to the price instrument, except for the fact that the priceless instrument cannot accurately account for private costs?[133] Why not gather that information, then use the more effective instrument going forward? If private costs change over time, the government could periodically introduce small-scale experiments to recalibrate.

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128. *See generally* GUIDO CALABRESI, THE COST OF ACCIDENTS 135–97 (1970).

129. Or, putting this point another way, the true MSD is the lesser of harm or avoidance costs.

130. *See* Kaplow & Shavell, *supra* note 46, at 6 (suggesting use of varying tax schedules over time to reveal private cost information of externality producers). I am grateful to Louis for pointing out that this same argument can apply to the question of victims' costs.

131. Note that we are assuming that the government has ready access to the MSD "schedule," or at least to the expected MSD schedule. That is, the government can draw the MSD and producer's cost curves. It therefore can trace a line from the intersection of the cost of the price instrument and the producer's cost curve, and find the corresponding point on the MSD curve. That would allow it to infer the damage suffered by the average victim.

132. Nussim, *supra* note 127, at 7–8.

133. *Cf.* Calabresi & Melamed, *supra* note 44, at 1119 (arguing that, if not for information problems, property rules would usually be preferable).

No doubt it would be complex and costly to switch all of society from one regulatory instrument to another, but such large-scale disruptions would often be unnecessary. Unless every externality producer is perfectly unique, information gathered about some producers will very likely be relevant for others. Carbon mitigation costs may vary dramatically between different "generations" of power plant, but those using similar technologies will probably have similar costs. So small-scale experiments—for instance, in state "laboratories"—can provide data for later nationwide expansions.[134]

Another experimental method for replicating the informational benefit of a price instrument is to find what we could call the "shadow price" of its priceless alternative. Though many commentators seem to assume that quantity regulations are something like an absolute command,[135] more realistically any form of punishment can be priced and used in an optimal deterrence framework.[136] This shadow price can, like a traditional price, be set at the optimal level by matching it to the marginal social cost of the internality or externality.[137]

Social science should be able to estimate a person or firm's dollar-equivalent responsiveness to a priceless instrument.[138] Suppose that 50% of the population saves at the government's target savings rate when they are automatically enrolled in a retirement plan. To measure the subjective "cost" of opting out of the default, we can set up a parallel experiment in which we measure what dollar amount would produce an equal 50% participation rate. That equivalent dollar amount is the shadow price of the

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134. But note that this likely requires carefully directed experiments rather than unguided state policy making. *See* Michael Abramowicz et al., *Randomizing Law*, 159 U. PA. L. REV. 929, 946–47 (2011) (noting that "[f]ederalism . . . does not easily facilitate a scientific approach to experimentation"); Brian Galle & Joseph Leahy, *Laboratories of Democracy? Policy Innovation in Decentralized Governments*, 58 EMORY L.J. 1333, 1368–70 (2009) (summarizing evidence that state "experiments" fail to meet the needs of real experimentation).

135. *See* Robert Cooter, *Prices and Sanctions*, 84 COLUM. L. REV. 1523, 1535 (1984) ("If officials obtain the necessary information and create an optimal legal standard, then private persons will be required to obey the legal standard upon pain of suffering the sanction attached to it."); Hepburn, *supra* note 45, at 241 ("Current speed limits are clearly a very crude approximation to 'optimal' speed limits[,] . . . where travel in excess of the speed limit is possible provided a fine is paid.").

136. *See* Becker, *supra* note 22, at 182–83 (using punishment, among other variables, in an optimal deterrence framework to determine the socially optimal levels at which "crime does not pay"); Rasmusen, *supra* note 22, at 524–27, 538 (incorporating the expected cost of "stigma" into his optimal deterrence framework).

137. Indeed, Kaplow and Shavell rely on the notion that regulatory commands can be interchangeable with prices elsewhere in their argument for price instruments. Kaplow and Shavell, *supra* note 46, at 9. They critique the traditional view that quantity regulation, and only quantity regulation, can create a "hard cap" or mandatory limit on externalities by arguing that sharp price increments can have similar deterrent effects. *Id.* at 7–10.

138. For a real-world example, see Marianne Bertrand et al., *What's Advertising Content Worth? Evidence from a Consumer Credit Marketing Field Experiment*, 125 Q.J. ECON. 263 (2010) (comparing effects of framing and price changes on likelihood of consumer borrowing and estimating a value for each framing technique).

nudge. Alternately, we could run the two experiments together by setting the regulation in place and allowing those subject to it to buy their way out, as in the famous case of the Civil War draft. Draftees were allowed to pay someone else to serve in their place, providing evidence of the subjective cost of military service for both parties.[139]

To be sure, these shadow price measures are imprecise and may vary widely across individuals.[140] For that reason, some criminal law scholars seem skeptical that alternatives to fines, such as jail or shaming, can be fit seamlessly into the optimal deterrence framework. Variations in individuals' vulnerability to harms in prison, in their adaptability to adverse circumstances, and in their subjective experiences of punishment can make it difficult to determine an average "cost" of jail time.[141]

I don't want to diminish these criticisms, but in many respects they can also be said of instruments denominated in dollars.[142] For example, individuals can also adapt to their financial situation. Just as those in prison can experience "hedonic adaptation" in which they find the experience of punishment is not as severe as they expected,[143] so too can households grow accustomed to their wealth. Researchers who study happiness argue fiercely over whether greater wealth correlates with greater happiness.[144] Hedonic adaptation to household wealth levels seems at least a plausible explanation for why it is so difficult to demonstrate this correlation: humans can find joy in whatever we have and perhaps grow blasé with familiar wealth.[145]

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139. MICHAEL J. SANDEL, JUSTICE: WHAT'S THE RIGHT THING TO DO? 76–77, 80 (2009). As the draft example also infamously illustrates, an information difficulty for price instruments is that dollars do not have the same value for everyone. *Id.* at 82–83.

140. *See* Robert W. Hahn & John A. Hird, *The Costs and Benefits of Regulation: Review and Synthesis*, 8 YALE J. ON REG. 233, 240–43 (1990) (discussing limits on tools for translating "hedonic" preferences into dollar units); Hill, *supra* note 18, at 453 (giving examples of goods or taxes that provide different values to different individuals).

141. *See* John Bronsteen et al., *Happiness and Punishment*, 76 U. CHI. L. REV. 1037, 1046–55 (2009); Adam J. Kolber, *The Subjective Experience of Punishment*, 109 COLUM. L. REV. 182, 187–96 (2009). For a different take on the relevance of these data, see Dan Markel & Chad Flanders, *Bentham on Stilts: The Bare Relevance of Subjectivity to Retributive Justice*, 98 CALIF. L. REV. 907, 959–64, 967–73 (2010).

142. *See* Vandenbergh et al., *supra* note 29, at 735–36 (arguing that the impact of psychological or social factors may be more predictable than the effect of prices).

143. Bronsteen et al., *supra* note 141, at 1048–49.

144. *See* Richard A. Easterlin et al., *The Happiness–Income Paradox Revisited*, 107 PROC. NAT'L ACAD. SCI. 22,463, 22,463–67 (2010) (positing that over the long term, an increase in happiness does not follow an increase in wealth and critiquing alternative findings); Mike Morrison et al., *Subjective Well-Being and National Satisfaction: Findings from a Worldwide Survey*, 22 PSYCHOL. SCI. 166, 169–70 (2011) (finding that national satisfaction has a greater effect on overall life satisfaction for lower income individuals than it does on higher income individuals, partially compensating for the satisfaction discrepancies created by wealth disparities).

145. Thomas D. Griffith, *Progressive Taxation and Happiness*, 45 B.C. L. REV. 1363, 1389–90 (2004).

In addition, dollars could be less predictable than other forms of regulation to the extent that they are more or less salient. Of course, an incentive is usually only effective when people are aware of it. A growing body of real-world evidence suggests that consumers and other actors are not always fully attentive to dollar prices.[146] Math, and our understandable desire to avoid the pain of having to think about it, may help explain why people neglect prices.[147] Presumably that would be less of an obstacle for regulations that confront individuals with experiences or sensations rather than numbers. On the flip side, some researchers also find that dollar-denominated incentives are at times so visceral that they crowd out other, less tangible motivations,[148] which could make dollar-denominated sticks *more* salient than policy makers intend.

On the other hand, price instruments may retain their advantage in situations where experiments of the kind I have suggested are impractical. Suppose, for example, that landowners have a highly varying and idiosyncratic attachment to their property. If protecting that attachment is an important policy goal, price instruments might be more likely to achieve it.[149]

B. Transfer or No Transfer? Public or Private?

Another putative key advantage of taxes over regulation, or of fines over prison, is that in each case the transfer of money produces a better outcome than pure punishment or imposition.[150] As I will argue in this subpart, these claims may well be less true of nudges and other surprising forms of regulation. They also are less accurate when transfers flow not to

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146. *See* Raj Chetty et al., *Salience and Taxation: Theory and Evidence*, 99 AM. ECON. REV. 1145, 1153–56 (2009); Aradhna Krishna et al., *A Meta-Analysis of the Impact of Price Presentation on Perceived Savings*, 78 J. RETAILING 101, 101–18 (2002).

147. See Brian Galle, *Hidden Taxes*, 87 WASH. U. L. REV. 59, 81–85 (2009) for a discussion of the uncertain basis for the low salience of some taxes.

148. John Condry & James Chambers, *Intrinsic Motivation and the Process of Learning*, *in* THE HIDDEN COSTS OF REWARDS: NEW PERSPECTIVES ON THE PSYCHOLOGY OF HUMAN MOTIVATION 61, 61–66 (Mark R. Lepper & David Greene eds., 1978); *see also* Stephanie J. Byram, *Cognitive and Motivational Factors Influencing Time Prediction*, 3 J. EXPERIMENTAL PSYCHOL.: APPLIED 216, 233 (1997) (reporting that financial incentives for speed of performance exacerbate biased performance).

149. Kaplow and Shavell suggest that when idiosyncratic valuation is high, property rules are superior to liability rules. Kaplow & Shavell, *supra* note 44, at 759–63. But that argument deals with the special situation of takings, *id.*, which actually more closely resemble quantity regulation than price instruments: the initial owner has no choice about whether to sell the property, and so although there is a "price" that the government pays, that price reveals nothing about the owner's preferences. In my framework, compensated takings are priceless and (to the extent that compensation is imperfect) partial transfers.

150. *See* Helfand et al., *supra* note 23, at 287 (arguing that price-based instruments like effluent taxes are more efficient than quantity-based standards); *see also* Korobkin, *supra* note 84, at 1668–69 (asserting that a system allowing for trading ensures a better maximization of utility than an imposition of a one-size-fits-all standard).

the public coffers but instead to other private parties. And prior commentators seem not to have considered the possibility that transferless instruments may be superior to transfers in the case of carrots—that is, if the transfer would be *to* the externality producer, rather than away.

1. Of Transfers and Nudges.—To understand fully the claim that transfers are superior to transferless instruments, we must take a short detour into the economics of taxation. Recall that virtually all taxes produce deadweight loss, or economic waste resulting from changes in actors' behavior in response to the tax. But computing the net loss of a Pigouvian tax or other transfer is a bit complicated, although in the case of externalities it has now been thoroughly examined by economists.[151]

The welfare effects of the stick transfer are a combination of several factors. Like any tax on a specific commodity, the transfer changes people's decisions about what goods to put in their market basket, producing deadweight loss.[152] It can also reduce their "real" returns to labor. That is, when laborers decide whether to get out of bed and go to work, they implicitly are deciding whether the utility payoff of their salary is worth the opportunity cost of more pillow time. Since taxes on goods reduce the utility payoff from salary, economists typically predict that a consumption tax will also affect this labor/leisure decision; this effect is sometimes called the "tax-interaction" effect because it is compounded in the presence of existing taxes on labor itself.[153]

In the case of Pigouvian taxes or other transfer instruments, the funds can be "recycled" by using them to cut other, distortionary taxes.[154] Depending on how well that recycling is targeted, the gains from offsetting other taxes may or may not exceed the deadweight losses the transfer produces.[155] And, of course, when consumers switch away from the taxed

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151. For an accessible overview, see Parry & Oates, *supra* note 23, at 604–10, and for a more technical summary, see Bovenberg & Goulder, *supra* note 74, at 1486–507. Few previous commentators have examined the efficiency of a Pigouvian tax for internalities, or harms we do to ourselves. The major exception is Ted O'Donoghue & Matthew Rabin, *Optimal Sin Taxes*, 90 J. PUB. ECON. 1825, 1834–35 (2006), who omit consideration of the effects of the tax on labor supply. As I show here, that can be a major factor in the efficiency of the tax.

152. For instance, suppose Massachusetts taxes orange things but not pink ones. I prefer oranges to grapefruit. When I shop in Massachusetts, though, I might buy grapefruit to avoid the orange tax. My utility is lower, and Boston has no more money in its treasury. That is deadweight loss from a differential tax on consumption goods.

153. Parry & Oates, *supra* note 23, at 605–06. It is also likely that there are tax-interaction effects for taxes on capital, but these have not been thoroughly explored in the existing literature.

154. *Id.* at 606–07.

155. *See* Bovenberg & Goulder, *supra* note 74 (concluding that "small" environmental taxes offset the labor tax increase, whereas "large" environmental taxes do not offset the increased labor tax burden and lead both to a reduction in real wages and a drop in employment). Of course, revenues could also be used for new government programs rather than to reduce taxes. One way to think about why we focus on the cost of raising revenues instead of the benefit of these

good, they reduce harmful externalities for others. It might be helpful to think of the various effects as the terms of a simple equation:

$$U_t = E - L - C + R.$$

That is, the utility effect of the transfer includes E, externality gains; losses from the tax-interaction effect on labor, L; losses from changes in consumption choices, C; and gains from revenue recycling, R.[156]

Recall, too, that environmental economists argue that even regulations that do not explicitly put a price on behavior can also cause deadweight losses, especially when those regulations are enacted in the context of an existing income tax.[157] But unlike the transfer, the regulation does not bring in any new funds. In effect, the regulation gives us a utility result:

$$U_r = E - L - C.$$

Prior commentators therefore argue that a tax is unambiguously better by the amount of the quantity, R.[158] That is the logic that seems to be motivating critics who complain that New York's soda-cup default is a worse policy than a soda tax.

A critical assumption in this line of argument is that the labor-supply effects of the transfer and transferless policies are identical. In many instances that assumption is perfectly defensible. If the government has accurately determined the optimal quantity of the externality, presumably the cost of achieving that optimal level of production is identical under either instrument. Rational actors will account for that cost when they decide how hard to work.

An example here could be helpful. Let's take a soda drinker, Albert. The City of Novum Eboracum wants to reduce the burden of Albert's future health costs on its budget and determines that the optimal soda tax for Albert is $.50 per centiliter, which results in five liters of soda consumption on average. At $250 per week, that tax will likely significantly reduce

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programs is that the benefits would be the same no matter how we paid for them. So the only variable is how socially costly it is to acquire the money to fund them.

156. This equation follows from, but simplifies, the calculations in Bovenberg & Goulder, *supra* note 74, at 1486–503. In my view the assumption that there are distortions in the commodities market, modeled here as the quantity *C*, should be controversial. The claim seems to be that consumers have clearly formed preferences prior to imposition of the tax and that the tax distorts these. But arguably the tax itself shapes or helps consumers to revise preferences, as was reportedly the case of the Washington, D.C.-area tax on shopping bags. *Cf.* Barr et al., *supra* note 68, at 28–29 (arguing that preferences are constructed during decision processes). If so, it isn't clear that this effect should count as a distortion. Rather than take a definitive position on the question, I will simply assume for now that these changes should count as welfare losses.

157. Bovenberg & Goulder, *supra* note 74, at 1502.

158. *See* sources cited *supra* note 52.

Albert's real returns to labor, and therefore figure prominently in his decision how hard to work. Alternately, the City can make obtaining soda annoying or unpleasant, such as by selling it only in very small containers. By definition, the shadow price of the annoyance, when it is set optimally, is $250—the exact amount of annoyance that Albert experiences when he pays the optimal soda tax. If Albert rationally anticipates the irritation of going back to the store for many tiny bottles of soda, that, too, should figure into his labor–leisure decision.

Except that we know from psychological research that Albert actually is unlikely to anticipate his future subjective costs of complying with the City's nudge. System one processes are automatic, not deliberative.[159] As such, their operation can be difficult to notice in real time, and even more difficult to predict.[160] Nudges that rely on our tendency to draw on automatic behavior, such as placing healthy food close to the cash register or using visceral, emotionally charged images rather than detailed information, affect us without triggering conscious thought.[161] Unsurprisingly, many studies find that consumers are extremely poor at predicting their own susceptibility to private firms' use of these kinds of techniques.[162]

Thus, Albert may not even anticipate that the nudge will change his behavior. Recall that portion size affects consumption exactly because we don't think about how much we're consuming, instead letting ourselves be guided by whatever we're presented with.[163] Reducing the size of a soda

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159. Kahneman, *supra* note 104, at 1450–51.

160. *See* Roland Bénabou & Jean Tirole, *Self-Knowledge and Self-Regulation: An Economic Approach*, *in* 1 THE PSYCHOLOGY OF ECONOMIC DECISIONS 137, 137–38 (Isabelle Brocas & Juan D. Carrillo eds., 2003) (summarizing the authors' findings that individuals may not know "what actions they would take in a given situation until the very moment when they actually experience it"); George Loewenstein & David Schkade, *Wouldn't It Be Nice? Predicting Future Feelings*, *in* WELL-BEING: THE FOUNDATIONS OF HEDONIC PSYCHOLOGY 85, 92–98 (Daniel Kahneman et al. eds., 1999) (discussing how people consistently overestimate their own willpower and often inadequately predict how they will act in an excited state); *see also* Kahneman, *supra* note 104, at 1451 ("The operations of System 1 are fast, automatic, effortless, associative, and often emotionally charged; they are also governed by habit, and are therefore difficult to control or modify.").

161. *See* THALER & SUNSTEIN, *supra* note 8, at 20–22.

162. *See, e.g.*, Stefano DellaVigna & Ulrike Malmendier, *Contract Design and Self-Control: Theory and Evidence*, 119 Q.J. ECON. 353, 364 (2004) (noting that consumers often choose contracts with initial discounts, such as low credit interest, more often than they anticipate, even though these contracts eventually lapse into greatly augmented interest rates and profit for the issuing firm); Sha Yang et al., *Unrealistic Optimism in Consumer Credit Card Adoption*, 28 J. ECON. PSYCHOL. 170, 181 (2007) (concluding that consumers with unrealistic and self-serving optimism regarding future borrowing tend to prefer credit cards with features that are not in their best interest and are thus targeted customers for lending institutions).

163. *See* sources cited *supra* note 10. However, individuals may respond to nudges *after* they experience them. Some evidence suggests that nudged food consumers compensate for healthier choices by eating unhealthier foods afterwards. *See* Matteo M. Galizzi, *Label, Nudge or Tax? A Review of Health Policies for Risky Behaviours*, 1 J. PUB. HEALTH RES. 14, 16 (2012).

portion could diminish consumption without drinkers even really noticing, let alone changing their work habits in response.

Researchers are less clear on our ability to predict our own willpower. Though our exact predictions are poor, those who struggle with temptation usually know it and take steps accordingly.[164] Nonetheless, if surprising regulations often work because we are unwilling to exert the mental effort to overcome them, it seems unlikely we would exert the mental effort to compute and adjust our labor supply in response.[165] Others may refuse to face the fact of their own failings in order to preserve their self-esteem or to reduce feelings of internal conflict.[166]

On the other hand, the prediction that nudges will have little effect on labor supply depends to some extent on the assumption that labor supply is a system two process—that we think and plan about how hard to work. What if labor supply instead is itself a fairly instinctual process, where we force ourselves out of bed each morning based on some gut sense of how rewarding work will be? Perhaps Albert has some vague sense of dissatisfaction with the returns of his salary, without being able to identify that it is related to his newly healthy diet. No empirical work has yet examined the labor-supply effects of nudges, and so this seems to be a critical area for future research.

In any event, it is at least theoretically plausible that surprising policy instruments could have surprisingly low effects on labor supply, relative to more traditional transfers. In the most dramatic cases, labor effects could be negligible. Then it would be ambiguous whether transfers are superior; in terms of the earlier equations, transfers are superior only where $R > L$:

$$[U_t = E - L - C + R] > < [U_n = E - C].$$

That is, since these forms of transferless instruments eliminate labor distortions but bring in no revenues, they are the better choice when the transfer's labor distortions reduce welfare by more than its revenues increase welfare.[167] As it turns out, the relationship between R and L depends on whether transfers are public or private. Let's turn there next.

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164. *See* Nava Ashraf et al., *Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines*, 121 Q.J. ECON. 635, 636–37 (2006); Ted O'Donoghue & Matthew Rabin, *Doing It Now or Later*, 89 AM. ECON. REV. 103, 105 (1999).

165. *Cf.* Patrick Bolton & Antoine Faure-Grimaud, *Thinking Ahead: The Decision Problem*, 76 REV. ECON. STUD. 1205, 1205–08 (2009) (modeling costs of deliberating about future decision settings).

166. *See* Roy F. Baumeister, *The Self*, *in* 1 THE HANDBOOK OF SOCIAL PSYCHOLOGY 680, 688–92 (Daniel T. Gilbert et al. eds., 4th ed. 1998).

167. A key assumption here is that the efficacy of the nudge-type intervention, represented here by the *E* term, can approximate the efficacy of other tools. For skepticism on that point, see Ryan Bubb & Richard E. Pildes, *How Behavioral Economics Trims Its Sails and Why*, 127 HARV. L. REV. (forthcoming 2014) (manuscript at 70–73), *available at* http://papers.ssrn.com/sol3/papers

2. Public or Private Transfers?—We saw earlier that not all sticks transfer money to the government, nor does the public fisc pay for all carrots.[168]   As prior commentators note, this shift can have important welfare implications.[169]   Others have not recognized, though, that these welfare consequences generally weaken the case for transfer instruments. Transfers to private parties are typically not as efficient as transfers to the government, and so this diminishes the advantage of the transfer relative to a transferless policy. Likewise, transfers paid for by private parties are less efficient than if the government pays.

Here again the results follow from some basic principles of tax economics. Recall that the deadweight loss of taxes rises exponentially with the size of the tax; doubling the tax is four times as bad, roughly speaking. All else equal, when there are more taxpayers contributing to the cost of a given program, the tax rate for each is of course lower. Putting these two facts together, it is well known that society is typically better off if costs can be spread as widely as possible.[170]   Privately funded carrots are often less efficient, then, because the group who pays for the carrot will almost certainly be smaller than the group of all taxpayers, resulting in greater total deadweight loss in most cases.[171]

A bit less obviously, dedicating transfer funds to private beneficiaries can be inefficient for similar reasons.[172]   Think of the transfer to the private group as a special-interest income tax cut for that group.[173]   The opportunity cost of the transfer is that we could have used the same money to fund an income tax cut for everyone. Which would have generated greater welfare? The answer often has to be the tax cut for everyone. Why? Because the deadweight-loss savings of the first dollar of income tax savings is the biggest—that is, going from $100 to $99 is a bigger savings than going from $99 to $98, and so on. Multiplying that large gain times the whole of the taxpaying public is a much greater gain than getting only the gains

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.cfm?abstract_id=2331000, and Lauren E. Willis, *When Nudges Fail: Slippery Defaults*, 80 U. CHI. L. REV. 1155, 1226–29 (2013).

    168. I am still assuming for the sake of simplicity that all externality producers are private parties so that sticks are paid and carrots collected privately.

    169. *E.g.*, Gallini & Scotchmer, *supra* note 61.

    170. *See* sources cited *supra* note 63.

    171. Gallini & Scotchmer, *supra* note 61. Some of the qualifying language in this sentence derives from the fact that I am omitting any consideration of the marginal utility of money. But note that, in general, diminishing marginal utility will also weigh against private transfers; even if everyone starts with the same amount of money, the marginal cost of the last dollar paid by the private funders will be greater than the cost of the last dollars paid by the general public, since the general public will have more money left over after paying.

    172. *See* Thomas D. Griffith, *Should "Tax Norms" be Abandoned? Rethinking Tax Policy Analysis and the Taxation of Personal Injury Recoveries*, 1993 WIS. L. REV. 1115, 1123–27.

    173. Lump-sum transfers would be even less efficient. By granting the transfer in the form of a tax cut, we can reduce the deadweight loss of taxation in addition to enriching the transferees, while a lump-sum transfer only accomplishes the latter.

from, say, $100 to $50 for a few people. I add a numerical example in the margin below for interested readers.[174]

In the analysis so far I haven't mentioned any distributive considerations, such as the marginal utility of money for the payors and payees, and for good reason. The trade-off in allocating transfers to or from private parties, we have just seen, is no different than the trade-off involved in designing the income tax itself: should some people get a tax break, at the expense of everyone else?[175] If that were a good trade-off, presumably income tax designers would already have made it, or could do so soon, unless for some reason it is administratively easier to effect redistribution through the policy instrument, rather than the tax system.[176]

We're now in a good position to revisit the relative size of R and L from the previous section. Remember that R is the social welfare gained from cutting income taxes by the amount of the revenues earned by a transfer instrument, while L is the amount of welfare lost to distortions in labor supply from that instrument. A transferless instrument that creates neither, or only a negligible L, is a better choice when $L > R$ for the transfer instrument alternative. When would that happen? Usually L and R are both derived from changes in labor supply, so that R is just the bonus we get by reducing our labor-distorting income tax. Since both L and R involve transfer of the same amount of money—L is the loss from a tax hike of X, while R is the gain from a tax cut of X—if both are distributed evenly across the whole population there is no net change.

More likely, the population subject to L is private—it's the small group of externality producers. Externality producers are going from paying, say, 100 to 110, while the public is getting a cut from 100 to 99. Because, again, distortions rise exponentially with the tax rate, the welfare losses, L, involved in the producers' jump are larger per dollar of revenue than the benefits, R, the public gets. As environmental economists have recognized, it is therefore not very likely that we can come out ahead by

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174. Suppose Priya Vat faces a tax of $100x$. Assume for simplicity the deadweight loss of the tax is the square of the tax, so Priya's tax comes with a total deadweight loss of $10,000x$. Should we reduce Priya's tax to zero or give 100 other people, each also currently paying $100x$, a $1x$ cut? Priya's break saves us $10,000x$. Each $1x$ cut we give to someone else saves us ($10,000x − $9,801x = $199x$). Obviously, $100 \times $199x = $19,900x$, much more than we would save from Priya's cut. Note, though, that if it turns out that Priya is paying a much higher tax rate than other members of the public, such that the deadweight loss of taxing her is considerably greater, we could have a closer question.

175. *Cf.* KAPLOW, *supra* note 58, at 152–56 (explaining that all transfers can be considered in an "aggregate" framework as aspects of the income tax system).

176. *Cf.* Gerrit De Geest, *Removing Rents: Why the Legal System Is Superior to the Income Tax at Reducing Income Inequality* 8, 35 (George Washington Univ. Legal Studies Research Paper Series, Paper No. 13-10-02, 2013), *available at* http://papers.ssrn.com/sol3/papers.cfm ?abstract_id=2337720 (arguing that tax systems may have higher administrative and information costs than regulation).

taxing the small group to pay for cuts for everyone else.[177]   So usually $L > R$.   This answers the question we left open at the end of section III(B)(1): transferless instruments with little labor distortion *do* frequently offer an advantage over transfers.

I do not mean to suggest that the reshuffling of revenues is the only important aspect of the public/private question.   Again, the distribution of benefits and burdens can affect incentives, not to mention the political economy of the instrument.   For instance, one might defend the tax exemption for tort judgments on the grounds that the extra social costs of making the revenues wholly private are necessary to buy added enforcement and monitoring effort from private parties.[178]   I will largely reserve those questions for elsewhere, however.

3. Transfer Carrots.—Finally, commentators have not previously acknowledged that transferless instruments have a deadweight loss advantage over carrots.   If carrots are the only transfer instrument available, transferless alternatives may be preferable even if they do not provide as precise information.   Surprisingly, carrots often can be a better bargain than sticks or transferless instruments on a per-unit basis, but their poor targeting ultimately makes them pricier.

Carrots look like a bargain because they don't reduce the labor supply of externality producers.[179]   In the externality case, we can give the utility of offering a carrot as:

$$U_c = E - C - R_c$$

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177. Bovenberg & Goulder, *supra* note 74, at 1498–503. That is less true if revenue gains can be made in a tax more distortive than the income tax, such as the corporate tax. *Id.* at 1505–07. Similarly here, if the government can pay for its carrots using a tax *less* distortive than the income tax, the carrot transfer is more appealing.

178. *Cf.* Dan Markel, *Overcoming Tradeoffs in the Taxation of Punitive Damages*, 88 WASH. U. L. REV. 609, 636–38 (2011) (suggesting that a plaintiff's claim on punitive damages can be thought of as a "finder's fee").

179. The subsidy creates no labor effect among marginal agents because by assumption the amount of the subsidy is just enough to leave them indifferent. *See* De Geest & Dari-Mattiacci, *supra* note 72, at 363 (distinguishing carrots from sticks by noting that carrots "fully compensate" producers). If the subsidy is less than this amount, it is never collected. If it is more than this amount, then it would increase real returns to labor, but it also would be pure waste from the perspective of the government—in our equation, a more positive *L* term would be offset by a diminished *E* and greater *C* terms. Of course, it is still possible that the pure exchange of higher taxes on some in return for increased labor for others could be welfare-enhancing; that is arguably the case for the Earned Income Tax Credit (EITC). *Cf.* Gregory Acs & Eric Toder, *Should We Subsidize Work? Welfare Reform, the Earned Income Tax Credit and Optimal Transfers*, 14 INT'L TAX & PUB. FIN. 327, 332 (2006) (observing that EITC offsets the negative work incentives of the payroll tax). But that would take us away from the Pigouvian tax setting that is my focus here.

where E and C are the same as before and R_c is the deadweight loss associated with increasing income or other taxes to pay for the carrot.[180] By comparison, we still have:

$$U_s = E - L - C + R \text{ and } U_r = E - L - C.$$

These equations imply that for any given unit of externality reduction, a carrot is welfare superior to transferless instruments when $L > R_c$ and superior to sticks when $L > R + R_c$. That is, the carrot is a better deal when the cost of paying for the carrot is less than the welfare loss that would be caused by the other instruments' effects on labor supply.

In all likelihood, however, the per-unit cost of the carrot must be paid many more times than the per-unit cost of a stick or transferless instrument. As Dari-Mattiacci and De Geest argue, all carrot beneficiaries will typically claim their carrot, regardless of whether the carrot changes the claimant's behavior.[181] The cost of the other instruments is only incurred, though, for those who would not otherwise have complied. For example, if the government paid people not to steal, it would have to pay almost the entire population, while if it nudged them away from theft, only the lightest fingered of the population would feel much burden. I will add that this large potential difference in total "price" also affects the size of the R_c term: when there are more carrot claimants, the tax rate needed to pay for them also rises, with exponential effects on the resulting welfare loss.

C. Carrot, Stick, or Compromise?

By definition, a transfer instrument must be either a carrot or a stick: value is either transferred to the externality producer or away from it. In my prior work on carrots and sticks, I argued that in many cases choosing either instrument involves trade-offs.[182] For instance, using carrots to encourage positive externalities may offer desirable income effects but threaten serious incentive problems. Transferless instruments offer a third way. Since they don't move money around, they lack both the benefits and detriments of carrots and sticks. Sometimes, that middle ground might be the best of all. Let's look at three different kinds of trade-off: income effects, redistribution, and incentives.

1. Income Effects.—It seems obvious that where sticks reduce the wealth of payors and carrots increase it, transferless instruments sometimes do neither. Though it is an obvious point, it is also potentially a very

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180. Note that I assume that the subsidy creates a loss, *C*, from distortion in the product market because, like the penalty, it changes consumers' preferences.

181. Dari-Mattiacci & De Geest, *supra* note 27, at 369–76.

182. Galle, *supra* note 27, at 809–13.

significant one, and one that no other commentators seem to have focused on. Income effects often present some of the strongest arguments for choosing between carrots and sticks.[183] As we will see, the availability of a third option with intermediate income effects will often open new and potentially more efficient policy possibilities.

Of course, some transferless regulations do change wealth. Zoning changes or other land-use regulations could make my existing property more valuable or less. As Calabresi and Melamed noted, in the presence of transaction costs the simple act of assigning a legal entitlement, such as the right to exclude, to one party might subjectively enrich that party.[184]

Many other regulations affect welfare, but not *wealth*. That is an important distinction, since the income effect operates primarily from changes in a person's budget; as our capacity to engage in trade expands, we may want different things.[185] When I lose a $20 bill, I can buy less, but stubbing my toe and suffering $20 worth of throbbing pain has no impact on the groceries I can take home. Shaming, imprisonment, and the mental hassle of opting out of a sticky default all could fall into this category.

Internalities present a more complex picture. Government policy that helps individuals overcome their own mistakes may help individuals to better allocate their spending. The consumer now can buy more of her highest-priority goods instead of wasting money on tempting alternatives. In effect, her budget has expanded. Or, alternately, we can think of the internality correction as having provided the consumer with a free service, such as credit counseling or a "commitment device," that is, a reliable way of helping people commit to not spending foolishly.[186] Evidence suggests that many households are willing to pay considerable amounts for commitment devices.[187]

In the case of normal goods, this income effect can somewhat offset the substitution effect on the consumer's consumption of the internality good. For example, once Lindsay is no longer spending as much money each month on her morning vodka, she can more easily pay rent.[188] With her housing stable, it is rational for her to consume more of the less important items in her budget, including the occasional glass of wine with dinner.

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183. *Id.* at 832–38.

184. *See* Calabresi & Melamed, *supra* note 44, at 1098–99.

185. *See* GRUBER, *supra* note 32, at 35–37.

186. *Cf.* Markus Haavio & Kaisa Kotakorpi, *The Political Economy of Sin Taxes*, 55 EUR. ECON. REV. 575, 580 (2011) ("[S]ophisticated consumers might value sin taxes as a way of committing to a lower level of consumption in the future.").

187. Ashraf et al., *supra* note 164; David Laibson, *Life-Cycle Consumption and Hyperbolic Discount Functions*, 42 EUR. ECON. REV. 861, 868 (1998).

188. *Cf.* Chetty et al., *supra* note 146, at 1173–74 (discussing the income effect of improved allocation of consumer choices).

Although the nudge does, therefore, have some potential income effects, that effect is still an intermediate position between sticks and carrots. An internality-correcting carrot would have an even larger income effect: it would both expand the household's budget and also improve its allocation. And internality-correcting sticks would have both positive and negative income effects (better allocation, less money), such that it is unclear which dominates in any particular instance. But since the positive income effect of correcting the internality (improved allocation) seems identical no matter the instrument, the stick's propensity to increase demand would be unambiguously less than that of the nudge.

For pure internalities, though, the income effect of a government correction may not matter much. By assumption, society's only interest is in helping the household get to its unbiased preferred consumption of each good. The household's demand for the internality does not drop as far as it would in the absence of income effects. But the new level of consumption is still the efficient level for the household, given its new wealth and preferences.

The income effects of correcting an internality are most clearly problematic in the case of goods with both internalities and externalities.[189] Imagine that the Shvitz household has an old, inefficient air conditioning unit. They receive a government subsidy to buy a new one. Though they will spend less on energy consumption keeping cool, they also will be able to afford to run their air conditioner more often. If they had instead been threatened with a fine and self-financed the purchase of a new air conditioner, they would have had less money to run the new unit. Also note in the energy case that households with higher wealth can consume other goods that produce externalities. Even though the Shvitzes are subjectively better off with their new unit, they also now have more money to drive around or heat their house in winter.

2. Distributive Effects.—Next, carrots and sticks differ considerably in the way they redistribute wealth, and that difference is important for many commentators.[190] Carrots move money from taxpayers or private payors to externality producers, while sticks do the opposite.[191] Transferless instruments, in contrast, can be distributively neutral.[192] That seemingly banal distinction has some potentially important policy consequences.

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189. *Cf.* Allcott et al., *supra* note 12, at 11–24 (modeling effects of subsidies for energy-efficient durable goods on marginal energy consumption).

190. *See* Calabresi & Melamed, *supra* note 44, at 1121 (using the example of a factory polluting a wealthy section of town to show how different solutions, among them carrots and sticks, produce markedly different trade-offs between economic efficiency and distributional goals).

191. *Id.*

192. *Id.*

For one, I have argued before that the distributive consequences of sticks may be a reason to prefer carrots when programs affect poorer households.[193] Transferring funds away from taxpayers who are already indigent runs contrary to basic distributive justice principles. Indeed, the logic of redistribution seems to have driven the design of both the Affordable Care Act (ACA) and the cap-and-trade climate change bill passed by the U.S. House of Representatives in 2009. Both legislative schemes relied primarily on a traditional stick to control externalities. The ACA, famously, imposes a penalty tax on households that fail to purchase insurance, while the cap-and-trade bill required businesses to purchase licenses to emit greenhouse gases.[194] Each, though, made exceptions for low-income families. The ACA exempts households that cannot find "affordable" insurance from its mandate, providing them with subsidies instead.[195] The climate-change legislation offered lump-sum refunds to each household, which in effect converted it into a transferless price.[196]

Carrots and transferless instruments have another practical advantage over sticks. It is well known that imposing liability on households that might be unable to afford to pay the full stick price would blunt the incentive effects of the price instrument.[197] If insurance is unavailable, the implication is that a different regulatory option—imprisonment, for example—may be necessary to ensure that poorer households face the correct marginal incentives.[198] Though other commentators have not mentioned it, this same argument can be a reason to substitute carrots for sticks.

If both carrots and transferless prices can account for low-income or judgment-proof producers, which one is the better choice? The ACA or the climate-change bill? There are good arguments for each, depending on context. As we have already seen, when income taxes are a perfectly viable redistributive tool, transferless instruments may be superior because they reduce the social cost of paying for carrots.

On the other hand, carrots may be a strong choice when policy makers cannot easily use the income tax for redistribution. Obviously, a carrot transfer will move more money to poor households than a transferless

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193. Galle, *supra* note 27, at 817–20.

194. 26 U.S.C. § 5000A(b)(3) (Supp. V 2012); American Clean Energy and Security Act of 2009, H.R. 2454, 111th Cong. § 311 (2009).

195. 26 U.S.C. § 5000A(e)(1).

196. H.R. 2454 § 431.

197. *See* Kaplow & Shavell, *supra* note 44, at 739–40; *see also* Helfand et al., *supra* note 23, at 297 (noting that judgment-proof firms are also difficult to adequately deter); Richard A. Posner, *An Economic Theory of the Criminal Law*, 85 COLUM. L. REV. 1193, 1208 (1985) (suggesting that nonmonetary penalties for crimes can be justified where a defendant has resources to pay a fine but those resources are illiquid).

198. *See* Kaplow & Shavell, *supra* note 44, at 740. See Polinsky & Shavell, *supra* note 22, at 411–12, 420–22, for development of this idea in the criminal-enforcement context.

instrument would. As we saw in the last section, redistributive carrots are often indistinguishable from using the income tax for the same purpose: we are raising some people's taxes to cut others'. Kaplow argues it therefore would be foolish to adopt an externality-correcting policy in order to effect some redistribution.[199] Since the policy offers only what is already available through existing institutions, we should not pay to set up a new regulatory structure unless it is worthwhile on nonredistributive grounds.

But this assumes a fully operational income tax. Even putting aside political economy concerns, redistributive income taxation can be impractical for some governments, or at least less efficient than a privately funded carrot alternative. Municipal governments offer a classic example. If a city imposes an income tax, it drives taxpayers into surrounding suburbs, where they can still enjoy most of its amenities.[200] User fees on the amenities make that kind of free riding more difficult.[201] These fees can then be used to subsidize amenity consumption by poorer users. For example, revenues from tolls or congestion fees can be set aside to pay for public transportation or other transit assistance for the indigent. For central cities, transfer policies may be the only practical way of achieving their preferred level of redistribution.[202]

3. Games and Mitigation.—A third set of major differences between transferless and rival instruments is their respective effect on incentives for future behavior. Nudges and other surprising instruments also have some additional features that distinguish them from ordinary transferless policies.

First, transferless instruments split the difference between carrots and stick transfers when it comes to the incentives of victims. Recall that efficient laws generally give victims the incentive to mitigate their own exposure to harm when they are the least cost avoider.[203] Victims who can collect damages for their full harm, despite failure to take precautions, may lack incentive to avoid injury. Therefore most commentators suggest that fines or punitive damages should be paid to the state rather than victims.[204] In my terminology, these proposals convert the private transfer into a public one.

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    199. KAPLOW, *supra* note 58, at 32.

    200. Richard Briffault, *Our Localism: Part II—Localism and Legal Theory*, 90 COLUM. L. REV. 346, 351–53 (1990).

    201. WILLIAM G. COLMAN, A QUIET REVOLUTION IN LOCAL GOVERNMENT FINANCE 9–10 (1983).

    202. Federalism theorists also suggest other alternatives, such as revenue sharing, but these have their own problems. Richard M. Bird & Michael Smart, *Intergovernmental Fiscal Transfers: International Lessons for Developing Countries*, 30 WORLD DEV. 899, 900–09 (2002).

    203. RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 172 (7th ed. 2007).

    204. *See* sources cited *supra* note 65.

I have argued before that even fully public transfers can fail to achieve the goals commentators set for them.[205] If victims are also taxpayers, they share partially in the benefits of the public transfer. Often that share is tiny enough to be irrelevant, but that is certainly less true of, say, a large firm in a small town. Reciprocally, carrots might be preferable to sticks, even if the carrots' costs are fully public, because potential victims or beneficiaries must bear a fraction of the treasury cost. The public therefore retains an incentive, if only partial, to reduce the cost of bribing externality producers. And of course this incentive would be stronger if the costs were borne by a small, private group.

By escaping revenue effects altogether, transferless prices fall in between these two cases. They avoid giving any reward, even a fractional one, to victims. If victim mitigation is an important concern, transferless instruments, such as prison, might be more efficient than transfer sticks, such as fines, contradicting what has been thought until now a fundamental tenet of the economics of crime.[206] Admittedly, though, transferless instruments also may fail to offer even the fractional incentive a carrot could provide.[207]

Secondly, surprising instruments add another wrinkle to the incentives game. Carrots and sticks differ crucially in their effects on forward-looking actors. According to Coase and many others, carrots' fatal flaw lies in their tendency to encourage new harms by producers who want to be paid to stop.[208] Similarly, in the case of positive externalities, carrots can crowd out good behavior or encourage strategic delays, as the producer dawdles until the government agrees to pay.[209] In contrast, a producer who anticipates that her activity will be punished has good reasons to take steps to mitigate her harm in advance.[210]

Transferless instruments can duplicate these *ex ante* effects, but only to the extent that externality producers recognize in advance that they will perceive the instrument as costly or rewarding. Will knowing that I might have to get up to drink a bigger serving of soda next year make me want to cut back on Coke today? Probably not to the extent a future soda tax

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205. Galle, *supra* note 27, at 824–27.

206. Crime theorists have made this argument at least since Bentham. Becker, *supra* note 22, at 193 n.40.

207. Some transferless instruments, such as imprisonment, can also be costly to construct and administer. But the carrot is typically more efficient because if set optimally its total cost is equal to the total harm, while the cost of the prison system is essentially random, and therefore could greatly over- or under-incentivize mitigation.

208. Wiener, *supra* note 27, at 726 & n.186.

209. *See* Cass R. Sunstein, *Television and the Public Interest*, 88 CALIF. L. REV. 499, 546–47 (2000) (examining the incentive effects of subsidies for public-interest broadcasting).

210. Saul Levmore, *Changes, Anticipations, and Reparations*, 99 COLUM. L. REV. 1657, 1663 (1999).

would.[211] Objectively, going back for a second serving seems like a trivial cost; it's only in the moment that we face it that it seems unduly burdensome.[212]

Nudges can therefore offer a third alternative to sticks and carrots, which may be useful in some policy scenarios. For example, I've argued that, despite the deep political obstacles to a successful global stick to prevent climate change, policy makers should avoid carrots due to their negative incentive effects.[213] Climate nudges, such as those Sunstein proposes in a forthcoming book chapter,[214] could be a third possibility, allowing for some incremental progress without triggering the kinds of gamesmanship carrots would. On the other hand, the people for whom nudges are most effective are exactly those who are the least forward-looking—they aren't the kind of people who weigh the future heavily in their present decisions. So anticipation effects of all kinds are smaller for that population, reducing the difference between nudges and more traditional instruments.[215]

4. Framing.—Finally, as I mentioned briefly in *The Tragedy of the Carrots*, and as Eyal Zamir discusses at length in his recent work, sticks may be more effective than carrots because of the way that humans perceive redistribution.[216] Some evidence suggests that we tend to respond more strongly to events we perceive as losses than we do to events framed as gains.[217] I posited that, because these framing effects are often manipulable and may be temporary, they likely should not be a central component of

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211. *Cf.* Jonathan Gruber, *Tobacco at the Crossroads: The Past and Future of Smoking Regulation in the United States*, J. ECON. PERSP., Spring 2001, at 193, 202–03 (summarizing studies finding that expectation of future price changes affects current consumption of willpower goods).

212. Camerer et al., *supra* note 17, at 1219, 1222.

213. Galle, *supra* note 27, at 845–46.

214. Cass R. Sunstein, *Behavioral Economics, Consumption, and Environmental Protection*, *in* HANDBOOK ON RESEARCH IN SUSTAINABLE CONSUMPTION (Lucia Reisch & John Thøgerson eds., forthcoming) (manuscript at 2–3), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2296015.

215. *Cf.* George Loewenstein & Ted O'Donoghue, *"We Can Do This the Easy Way or the Hard Way": Negative Emotions, Self-Regulation, and the Law*, 73 U. CHI. L. REV. 183, 189 (2006) (noting that *ex post* incentives are ineffective for individuals with unusually high time discounting).

216. Galle, *supra* note 27, at 816; Eyal Zamir, *Loss Aversion and the Law*, 65 VAND. L. REV. 829, 843–85 (2012).

217. Zamir, *supra* note 216, at 834–43. For skepticism about some but not all of this evidence, see Charles R. Plott & Kathryn Zeiler, *The Willingness to Pay–Willingness to Accept Gap, the "Endowment Effect," Subject Misconceptions, and Experimental Procedures for Eliciting Valuations*, 95 AM. ECON. REV. 530, 537–38 (2005) and Gregory Klass & Kathryn Zeiler, *Against Endowment Theory: Experimental Economics and Legal Scholarship* 27–42 (Georgetown, Pub. Law and Legal Theory Research Paper Series, Paper No. 13-013, 2013), *available at* http://ssrn.com/abstract=2224105.

price-instrument policy.[218]   Zamir, though acknowledging the manipulability of framing, suggests that loss aversion is nonetheless pervasive enough to be the source of important moral intuitions, such as tort law's differential treatment of negligent injury and negligent failure to rescue.[219]

Whether Zamir is closer to right than I am or not, transferless instruments could potentially represent a middle path of loss aversion. As far as I am aware, there is no clear evidence on whether individuals perceive the cost of overcoming defaults or other nonmonetary inconveniences as "losses." But given that we know some actors do not even notice that defaults have changed their behavior, it would be surprising if *on average* individuals viewed defaults as being as costly as explicit prices of similar magnitude. Nudges therefore offer policy makers a third option in the loss aversion continuum. Loss aversion presents policy makers with a trade-off. With lower loss aversion, they may get less deterrence per dollar of penalty.[220] But they also get less bitter political opposition from incumbent producers. Therefore, nudges might not be as effective as sticks, but they might be more politically achievable.[221]

D.   Targeting

A final important area where price instruments may diverge is their ability to be targeted or "tagged" most precisely. As others have shown, asymmetric policies can help to resolve serious targeting problems in the regulation of internalities.[222] Prior commentary has not explored whether this same argument still applies for the regulation of externalities; the basic logic of the targeting argument seems implausible in that context. I will

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218. Galle, *supra* note 27, at 808–09; *see also* Yuval Feldman, *The Complexity of Disentangling Intrinsic and Extrinsic Compliance Motivations: Theoretical and Empirical Insights from the Behavioral Analysis of Law*, 35 WASH. U. J.L. & POL'Y 11, 38–39 (2011).

219. Zamir, *supra* note 216, at 884, 887–90. For recent evidence that the framing of policies as tax or subsidy matters, see Homonoff, *supra* note 98, at 3–4.

220. For discussion of whether it would ever be optimal for producers to perceive prices as being in excess of their true cost, see Galle, *supra* note 121 (manuscript at 31–33) (short answer: probably not).

221. Another way in which nudges might be more politically viable is if internality sufferers are aware of their own problems but underestimate them. Then demand for an internality-correcting stick will be low. *See* Strnad, *supra* note 30, at 1256–57. But these same households would also presumably underestimate the cost of a future nudge, which could allow for a much costlier nudge than would be possible if the commitment device were structured as a monetary penalty. *Cf.* Katrina Fischer Kuh, *When Government Intrudes: Regulating Individual Behaviors that Harm the Environment*, 61 DUKE L.J. 1111, 1175–76 (2012) (noting that individuals may not oppose regulations that impose costs on them only indirectly); Michael P. Vandenbergh, *Order Without Social Norms: How Personal Norm Activation Can Protect the Environment*, 99 NW. U. L. REV. 1101, 1103–04 (2005) (arguing that changing conservation norms through information and other informal regulatory devices is more politically viable than price-based mandates).

222. *See supra* notes 95–97 and accompanying text.

argue that asymmetric approaches can have targeting advantages for positive externalities, mixed internality/externality cases, and instances in which human error weakens the power of conventional instruments.

1. Targeting Externalities.—The power of targeting lies in its ability to reduce unnecessary welfare costs of regulation. When individuals vary in their propensity for errors and willpower lapses, a uniform price or regulation may inefficiently distort incentives or otherwise produce deadweight loss.[223] For example, taxes on cigarettes might help some smokers who want to quit to steady their resolve. But other smokers might be "rational addict[s]," in Gary Becker's famous turn of phrase: they are well-informed, respond fully to the long-term costs they face, and accept them.[224] For them, the tax simply imposes pain or misshapes their preferences, a classic case of deadweight loss.[225]

Nudge proponents claim that asymmetric regulation accounts for heterogeneity by allowing costs to vary together with the need for correction.[226] That is, those who treat the costs of a nudge as larger also may tend to be those who suffer from internalities. The irrational smoker perhaps smokes because he focuses excessively on his present satisfaction. That same trait will make the burden of, say, putting on his coat and stepping outside to smoke much more irksome than it would be for others who weren't similarly present biased. So an indoor-smoking-ban nudge corrects the internality for those who suffer it while imposing rather small costs on those who don't.

It seems much harder to tell this story about externalities.[227] Nudges' targeting works best where susceptibility to the nudge is correlated with the harm to be prevented.[228] Toxic waste, though, is equally harmful no matter who emits it.

Nudges may, however, help overcome the problems caused by inframarginal producers of positive externalities, which can be thought of as an aspect of targeting.[229] Inframarginality can make carrots an especially

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223. Strnad, *supra* note 30, at 1252, 1254–55.

224. Gary S. Becker & Kevin M. Murphy, *A Theory of Rational Addiction*, 96 J. POL. ECON. 675, 676–78 (1988).

225. *See* De Geest & Dari-Mattiacci, *supra* note 72, at 362–65 (pointing out that sticks may burden actors with higher than average costs of compliance). If the tax is very small, though, the behavioral effect on rational consumers should be negligible, in which case internality gains should exceed any deadweight loss. O'Donoghue & Rabin, *supra* note 151, at 1835.

226. *See* Allcott et al., *supra* note 12, at 2, 23.

227. This difficulty has not dissuaded nudge proponents. *See* sources cited *supra* note 88.

228. Camerer et al., *supra* note 17, at 1219, 1222.

229. *See* Lily L. Batchelder et al., *Efficiency and Tax Incentives: The Case for Refundable Tax Credits*, 59 STAN. L. REV. 23, 45–46 (2006) (arguing that targeting is important for positive externalities because of the social cost of paying for subsidies). The marginal actor is the person who is just on the knife-edge of deciding what to do; with a bit of stick or carrot, they will change

wasteful policy choice. Carrots are generally awarded to everyone who goes along with the regulator's goals, so that there is no easy way to sort out those who would have done so anyway from those who needed some extra incentive.[230] Every itemizer who donates to charity gets a charitable contribution deduction, even if they would have given out of religious obligation or personal generosity.[231] That's most problematic for positive externalities because our intuition is that voluntary reductions in negative externalities are relatively rare. Any transferless instrument, including a nudge, can help on this front by reducing the social cost of transfers to inframarginal producers.

Both carrot and stick transfers can also actually reduce positive contributions from inframarginal producers by crowding out their internal motivation.[232] Researchers find that offering explicit monetary rewards can diminish voluntary contributions.[233] The psychological mechanism is uncertain.[234] Some psychologists suggest that monetary incentives are particularly apt to generate resistance because they reduce our sense of autonomy.[235] Possibly the dollar award attracts excessive focus, distracting volunteers from the more abstract reasons they held previously.[236] Being paid may also diminish the "warm glow" signal that donors usually experience: some individuals may behave altruistically because they want to be recognized by others as altruistic, and when there is an explicit monetary incentive, that signal is muddied.[237]

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their behavior. "Inframarginal" agents are so committed to their path that the incentive effects of the price instrument are not important.

230. De Geest & Dari-Mattiacci, *supra* note 72, at 370; Galle, *supra* note 27, at 820–21, 833–34. Under an effective enforcement regime, sticks will fall only on actors who defy the government's objectives, and so this form of inframarginality problem doesn't arise.

231. *See* I.R.C. § 170 (2006). I omit mention of some technical limits that don't affect my point.

232. Wendy J. Gordon, *Of Harms and Benefits: Torts, Restitution, and Intellectual Property*, 21 J. LEGAL STUD. 449, 457 (1992); Andrew Green, *You Can't Pay Them Enough: Subsidies, Environmental Law, and Social Norms*, 30 HARV. ENVTL. L. REV. 407, 432–35 (2006).

233. For a helpful overview, see Feldman, *supra* note 218, at 23–29.

234. *Id.* at 24.

235. Edward L. Deci & Richard M. Ryan, *The Empirical Exploration of Intrinsic Motivational Processes*, *in* 13 ADVANCES IN EXPERIMENTAL SOCIAL PSYCHOLOGY 39, 61 (Leonard Berkowitz ed., 1980).

236. *See* Bruno S. Frey & Alois Stutzer, *Environmental Morale and Motivation*, *in* THE CAMBRIDGE HANDBOOK OF PSYCHOLOGY AND ECONOMIC BEHAVIOUR 406, 412–13 (Alan Lewis ed., 2008) (suggesting that crowding out may be due to an individual's shift in focus from internal to external motivations).

237. *See* Ernst Fehr & Bettina Rockenbach, *Detrimental Effects of Sanctions on Human Altruism*, 422 NATURE 137, 140 (2003); William M. Landes & Richard A. Posner, *Salvors, Finders, Good Samaritans, and Other Rescuers: An Economic Study of Law and Altruism*, 7 J. LEGAL STUD. 83, 99 (1978); *cf.* E. Tory Higgins & Yaacov Trope, *Activity Engagement Theory: Implications of Multiply Identifiable Input for Intrinsic Motivation*, *in* 2 HANDBOOK OF MOTIVATION AND COGNITION: FOUNDATIONS OF SOCIAL BEHAVIOR 229, 240–43 (E. Tory

Nudges can offer a partial solution.[238] Several studies find that nudge-like interventions have improved altruistic behavior.[239] Because the nudge's incentive effect is not easily visible to others, it may not confuse the altruistic signal to the same extent dollars do. And the implicit "price" of the nudge is more subtle, and thereby perhaps less likely to reduce self-perceived autonomy or to assume more salience than the donor's other motives in his mind.

2. Mixed Internality/Externality Cases.—Another plausible story for why asymmetric regulations might be effective for externalities is if there are also internalities happening at the same time. For example, we might want to help the planet, but lack the willpower to dedicate ourselves on a daily basis to such a long-term goal.[240] Or we might fail ourselves in ways that also impose large harms on others, such as by overconsuming expensive energy sources or leaving ourselves vulnerable to risks that others will ultimately have to help us overcome.[241] In these scenarios, there is once again potentially a strong correlation between the subjective costs of the nudge or other surprising instrument and the need for regulation. For instance, instant energy feedback from "smart meters" will not do much to change the behavior of those who are already very energy conscious, but then it will not cost them much, either.

O'Donoghue and Rabin argue that taxes, too, can achieve the targeting benefit that they (in their joint work with Camerer and Issacharoff) attribute to nudges, but their claim relies on a questionable assumption. They posit that since only low willpower individuals will continue to consume tempting goods subject to a tax, rational consumers will not pay the tax.[242] But the optimal tax may vary considerably across individuals. For instance, soda drinkers who are more prone to diabetes may represent a greater

Higgins & Richard M. Sorrentino eds., 1990) (noting that extrinsic incentives may reduce perception that an actor was self-motivated).

238. *See* Amir & Lobel, *supra* note 19, at 2130–32 (suggesting that behaviorally informed regulation may be able to reduce crowding-out effects).

239. *E.g.*, Alberto Abadie & Sebastien Gay, *The Impact of Presumed Consent Legislation on Cadaveric Organ Donation: A Cross-Country Study*, 25 J. HEALTH ECON. 599, 606–13 (2006); James Andreoni & Justin M. Rao, *The Power of Asking: How Communication Affects Selfishness, Empathy, and Altruism*, 95 J. PUB. ECON. 513, 515–17 (2011).

240. Andrew Green, *Self Control, Individual Choice, and Climate Change*, 26 VA. ENVTL. L.J. 77, 78–79 (2008); *see also* Leonhard K. Lades, *Impulsive Consumption and Reflexive Thought: Nudging Ethical Consumer Behavior*, J. ECON. PSYCHOL. (forthcoming) (manuscript at 9–10) (on file with author); *cf.* Ayres, *supra* note 52, at 2088 (proposing use of sticky defaults to account for heterogeneity in production of externalities); Sunstein & Thaler, *Libertarian Paternalism*, *supra* note 17, at 1192–93 (discussing "libertarian benevolence," which appears to be the use of nudges to encourage positive externalities).

241. *See* Galle & Utset, *supra* note 89, at 72–77 (discussing the impact of time inconsistency, poor planning, and procrastination by certain households in energy consumption).

242. O'Donoghue & Rabin, *supra* note 151, at 1831, 1835.

potential social cost. High taxes on drinkers with low propensity to create externalities would simply represent deadweight loss, undermining their targeting argument. Nudges may also be better targeted in the sense that they may be better capable of changing the behavior of individuals who are usually inattentive to costs and benefits and so would not be much influenced by a tax.[243] But this is not to say that advances in tax design could not potentially match nudges' targeting potential in the future.[244]

3. Better than Errors.—Lastly, asymmetric regulation might be an effective supplement or alternative when human errors render less surprising instruments ineffective. Take the case of individual retirement arrangements, or IRAs, an important tax incentive for retirement savings.[245] One justification for IRAs is that, if households do not save now, the public will have to care for them when they are old and infirm.[246]

Despite their enormous annual cost—more than $125 billion annually[247]—IRAs and related retirement provisions don't seem to work, and it is easy to see why. Imagine that the government will pay you to overcome your tendency to procrastinate planning for retirement, but in order to collect your reward you have to read some program rules written in bureaucrat, find household records that establish your eligibility, go through some complex calculations, and fill out and submit government forms. Quite probably, serious procrastinators are the very last people who would benefit from that program.[248] But that is exactly the structure of IRAs.[249] Unsurprisingly, then, Chetty et al. find massive mistargeting of similar retirement incentives in Denmark, with about 85% of the beneficiaries, by their estimation, receiving subsidies that do not meaningfully change behavior.[250]

Asymmetric regulation is useful for these situations because it helps to patch gaps created by variations in the public's responsiveness to traditional regulation. Though some people are too inattentive or impatient for

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243. *Cf. id.* at 1835 (acknowledging that internality-correcting taxes are inefficient unless "people with self-control problems are sensitive to tax changes").

244. O'Donoghue & Rabin, *supra* note 164, at 109, offer some examples.

245. STAFF OF JOINT COMM. ON TAXATION, 110TH CONG., JCX-53-08, PRESENT LAW AND ANALYSIS RELATING TO INDIVIDUAL RETIREMENT ARRANGEMENTS 16 (2008), *available at* https://www.jct.gov/publications.html?func=startdown&id=1286.

246. POSNER, *supra* note 203, at 498–99.

247. CONGRESSIONAL BUDGET OFFICE, THE DISTRIBUTION OF MAJOR TAX EXPENDITURES IN THE INDIVIDUAL INCOME TAX SYSTEM 6 tbl.1 (2013).

248. This is not a problem entirely exclusive to carrots. For example, sticks that are imposed long after the unwanted behavior are poorly targeted because of excessive time discounting. Loewenstein & O'Donoghue, *supra* note 215.

249. *See* STAFF OF JOINT COMM. ON TAXATION, *supra* note 245, at 16–46 (discussing the present law surrounding IRAs).

250. Chetty et al., *supra* note 14 (manuscript at 43–44).

monetary incentives to be fully effective, others may be more sensitive. Even in the Chetty et al. study, 15% of Danes did respond quite readily to retirement incentives.[251]   Government could increase the size of its incentives to try to grab people's attention, but then we also are showering extra funds—or extra penalties—on those who were already paying attention, leading to complicated trade-offs.[252] So again we have a targeting problem, with potentially a strong correlation between some kinds of mental errors and the need for additional government regulation. Asymmetric regulation targeted to affect those who are especially insensitive to prices would therefore seem a good policy alternative.

I should acknowledge, though, that traditional prices may have an advantage over nudges when the optimal tax schedule is complex. Recall that—setting aside some possible complications—the optimal Pigouvian price should be set equal to marginal social damage.   For some externalities, that damage could vary considerably depending on, say, the consumer's prior health history, his family situation, where he lives, and so on.[253]   Alcohol consumption is a likely example, especially since small amounts of alcohol may actually improve some health outcomes.[254] With enough information, an *ex ante* tax can approximate these effects, and with a reliable enough system of proof, an *ex post* liability system can as well.[255]

It isn't clear whether nudges can.   If susceptibility to the nudge happens to be closely correlated with propensity to produce externalities, the impact of the nudge could vary with the marginal damage, but this may not always be possible.   But most commentators believe that the informational demands of such a flexible tax are also usually unrealistic,[256] so this may not be a significant weakness of nudges.

IV. Examples

We now have the tools to evaluate New York City's beverage-size limits, and a number of other innovative policy proposals, too. The results are a bit surprising. The superiority of taxes or other stick transfers, which prior commentators have almost universally assumed, in some instances is not so clear. Maybe less surprisingly, carrots often look even worse than they did when nudges were not in the picture, as nudges in many cases can substitute for carrots without presenting the same risks.

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251. *Id.* at 36.

252. For extended analysis of these trade-offs, see Galle, *supra* note 121 (manuscript at 13–35).

253. *See* Kaplow & Shavell, *supra* note 46, at 4–5 (indicating marginal social harm can be nonlinear or unfixed).

254. Strnad, *supra* note 30, at 1244.

255. *See* Jon D. Hanson & Kyle D. Logue, *The Cost of Cigarettes: The Economic Case for Ex Post Incentive-Based Regulation*, 107 YALE L.J. 1163, 1268–74 (1998).

256. O'Donoghue & Rabin, *supra* note 151, at 1830; Strnad, *supra* note 30, at 1271–72.

A. Soda

Let's begin our examples with the recent controversy over New York's sugary-beverage policy. The City Health Department justified its proposal primarily with an externality story: soda contributes significantly to obesity, which in turn imposes serious cost burdens on publicly funded health services.[257] The policy may also help to protect consumers against themselves, but for my purposes here not much changes if we also include this "internality" story.[258] Either way, the factors I have identified somewhat favor nudge-type approaches, such as the city's cap, over a soda tax or similar stick-like instrument, such as cutting subsidies to beverage ingredients or increasing tort liability for beverage producers.[259]

Size limits are better targeted at soda drinkers' potential internalities than a tax would be. The default size is most binding on individuals with high discount rates and excessive focus on the present.[260] Caffeine quaffers who excessively discount the future will more likely view the bother of obtaining a second cup as disproportionately large relative to the later benefits of quenching their thirst.[261] Similarly, those who are the most focused on their immediate surroundings would be the most likely to be influenced by the size of the portion in front of them.[262] These two groups are also those who predictably will not accurately account for the future cost of their consumption when they make present drinking decisions.

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257. Thomas A. Farley, *NYC Health Commissioner: Limiting Soda Is the Right Way to Protect the Health of New Yorkers*, FORBES (June 11, 2013, 7:30 AM), http://www.forbes .com/sites/robwaters/2013/06/11/nyc-health-commissioner-limiting-soda-size-is-the-right-way-to-protect-the-health-of-new-yorkers/; *see also* Korobkin, *supra* note 84, at 1681–82. For evidence that soda consumption contributes to obesity, and therefore to obesity-related health problems, see generally Cara B. Ebbeling et al., *A Randomized Trial of Sugar-Sweetened Beverages and Adolescent Body Weight*, 367 NEW ENG. J. MED. 1407 (2012); and Janene C. de Ruyter et al., *A Trial of Sugar-Free or Sugar-Sweetened Beverages and Body Weight in Children*, 367 NEW ENG. J. MED. 1397 (2012).

258. Jeff Strnad, in his exhaustive 2005 analysis, argued that "fat taxes" in general were best defended as a form of implicit insurance premium charged to consumers who would later put demands on the health-care system rather than as internality-correcting. Strnad, *supra* note 30, at 1234, 1267–68. But Strnad did not argue there were no internalities, only that taxes could not be targeted accurately enough at internality sufferers. *Id.* at 1322. Nudges may improve targeting enough to overcome Strnad's objections.

259. For discussion of the role of government subsidies in excess beverage consumption, see Adam Benforado et al., *Broken Scales: Obesity and Justice in America*, 53 EMORY L.J. 1645, 1791–95 (2004).

260. *See* James J. Choi et al., *Optimal Defaults*, 93 AM. ECON. REV. (PAPERS & PROCS.) 180, 180–81 (2003) (modeling properties of defaults generally).

261. For evidence that obesity may be the product of impatience, see sources cited *supra* note 115.

262. *See* Chandon, *supra* note 10, at 16 (connecting overeating to temptation and misperceptions of the true size of food portions); Andrew B. Geier et al., *Unit Bias: A New Heuristic That Helps Explain the Effect of Portion Size on Food Intake*, 17 PSYCHOL. SCI. 521, 524 (2006) (suggesting that "immediate presence" of temptation helps to explain the influence of portion size on consumption).

In contrast, a soda tax would likely fall on all consumers, including those who are not at any risk of obesity and those who have rationally concluded that the risks are worth the costs. At least for those at low risk, the tax simply imposes pain or distorts behavior without any offsetting gain. On the other hand, this argument presumes that any soda tax would necessarily have to be linear—that is, that we would impose the same price per serving for all consumers. If a more flexible schedule were possible, such that those who are at greater risk of health consequences paid higher prices, then the tax might be better targeted than the nudge. It is very unlikely the ideal portion size is identical for all consumers.[263] But realistically it also seems very improbable that either the tax or the portion size could be set to vary with real marginal costs.

The size limit may also be better targeted in the sense that it reduces the extent to which internality sufferers substitute into other unhealthy behaviors. For example, taxes on soda could encourage consumers to switch to other unhealthy choices.[264] Will soda drinkers similarly switch to sugary juices in order to be able to buy them in larger sizes? Though of course time will tell, the soda nudge might not produce much of this kind of switching. To induce switching, the would-be consumer must recognize in advance that she will want additional consumption and also recognize that she will then be unwilling to pay the price to overcome the default. As we have seen, both of these are uncertain: the consumption decision may be the product of the portion size the consumer experiences, and her ability to predict her perception of the price may be limited.

On the other hand, the soda tax certainly brings in more dollars than the size limit, but the welfare effects of that swap are less clear. As I argued earlier, it is possible that consumers would perceive an explicit tax to reduce their returns to labor, while not noticing or even appreciating the effects of a similar nudge. The beverage size limit seems a good example of where it is plausible that consumers would not connect the nudge to their labor/leisure decision, since again there will be consumers who do not even notice that the smaller portion size changed their preferences. If so, then the greater revenues of the soda tax also come at some additional social cost, and it is ambiguous whether the opportunity they offer to cut other taxes (or invest in worthwhile new government programs) makes society better off on net.

The nudge option does seem to have better distributive outcomes. Studies find that the population at greatest risk from excessive sugary

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263. Strnad, *supra* note 30, at 1321.

264. Eric A. Finkelstein et al., *Impact of Targeted Beverage Taxes on Higher- and Lower-Income Households*, 170 ARCHIVES INTERNAL MED. 2028, 2033 (2010) (raising the substitution question); Jason M. Fletcher et al., *The Effects of Soft Drink Taxes on Child and Adolescent Consumption and Weight Outcomes*, 94 J. PUB. ECON. 967, 972–73 (2010) (reporting evidence that taxes cause substitution to other unhealthy beverages).

beverage consumption tends to be rather poorer on average than others.[265] So the soda tax has a good chance to be even more regressive than a standard sales tax. Some commentators have suggested mitigating that unfortunate outcome either through paying back the tax's proceeds to low-income households through cash rebates or by offering subsidies for healthy food options.[266] But note that some of these alternatives are either identical to or (if subsidies exceed taxes collected) inferior on revenue terms to the nudge. If all revenues are rebated, the nudge and tax are identical, except that the nudge is better targeted.[267]

Finally, and cutting in the other direction, in the absence of a rebate taxes could have an advantage when it comes to income effects. Both the tax and the default could help the consumer to better allocate her available budget, creating a positive income effect—as the household feels richer, they demand more goods, including foods that could contribute to obesity. The tax, however, reduces the consumer's household wealth, likely diminishing her demand for soda.[268] On the other hand, some evidence suggests that junk food is an inferior good,[269] in which case the nudge is better: by leaving the household with more money, the nudge diminishes its demand for the unhealthiest foods.

On net, the case for surprising alternatives to a soda tax is surprisingly good. That is not to say that the 16-ounce cap is the best such policy. Right now, we have no particular reason to think that 16 ounces is the optimal serving size. But additional policy experiments can help to identify which transferless policies are best.

B. Retirement

It is interesting also to consider an instance where nudges could replace carrot transfers. Retirement savings offer a major example. In their study of Danish workers, Chetty et al. appear to endorse proposals replacing

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265. Valerie Gebara & Leena Gupta, *Consumption of Sugar Sweetened Beverages (SSBs) in New York City*, EPI DATA BRIEF (N.Y.C. Dep't of Health and Mental Hygiene), May 2011, at 1–2, *available at* http://www.nyc.gov/html/doh/downloads/pdf/epi/databrief4.pdf.

266. Battle & Brownell, *supra* note 30; Pratt, *supra* note 30, at 124–25; *see also* Sugarman & Sandman, *supra* note 30, at 1489 (proposing rebates to help states cover the costs of obesity reduction).

267. The tax might produce extra revenue if only a fraction is rebated—for instance, if only lower-income households collect a refund. But note that a means-tested rebate in effect is an income tax. *See* KAPLOW, *supra* note 58, at 153–54. Such a rebate would thus create additional economic distortions.

268. *See* Gideon Yaniv et al., *Junk-Food, Home Cooking, Physical Activity and Obesity: The Effect of the Fat Tax and the Thin Subsidy*, 93 J. PUB. ECON. 823, 826–27 (2009) (arguing that subsidies for healthy foods could increase demand for unhealthy foods through income effect).

269. Matthew Harding & Michael Lovenheim, The Effect of Product and Nutrient-Specific Taxes on Shopping Behavior and Nutrition: Evidence from Scanner Data 16 (Mar. 4, 2013) (unpublished manuscript), *available at* http://www.stanford.edu/~mch/resources/Harding_Nutrition.pdf.

tax incentives for retirement contributions, such as the 401(k) plan (and its lesser-known cousins, such as § 403(b)) with employer-administered default contributions to workers' retirement accounts.[270] Though they do not frame it in precisely the terms I have set out here, in essence their claim is that defaults are better targeted and less costly for the government.[271] Again, their study finds that "inattentive" investors save more when default contributions are ratcheted up, but that those investors ignore (while still benefiting from) tax incentives.[272] And inattentive investors make up 85% of the Danish working population.[273]   Thus, they claim that default contributions both require little government investment and also reduce the likelihood of giving money to inframarginal agents.[274]

My analysis supports this story, but suggests some possible qualifications.   For one, the welfare benefits of default savings may be smaller than Chetty et al. assume. Eliminating § 401(k) could save on the order of $125 billion annually, allowing the government to lower overall tax rates and reduce the deadweight loss of federal taxation.[275]   But the default may also generate deadweight loss, not only because it may not match the preferences of some "inattentive" investors but also because it might affect their labor supply. If workers who ignore retirement are in fact motivated only by today's take-home pay, they may perceive an extra 6%

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270. *See* Chetty et al., *supra* note 14 (manuscript at 43–44) (suggesting that automatic contributions are preferable to tax incentives). For a summary of past legislative efforts, see STAFF OF JOINT COMM. ON TAXATION, *supra* note 245, at 48–49. For other academic supporters of opt-in defaults as a solution to the retirement savings problem, see generally J. Mark Iwry & David C. John, *Pursuing Universal Retirement Security Through Automatic IRAs*, *in* AGING GRACEFULLY: IDEAS TO IMPROVE RETIREMENT SECURITY IN AMERICA 45 (Peter Orszag et al. eds., 2006); William G. Gale et al., *The Saver's Credit: Savings for Middle- and Lower-Income Americans*, *in* AGING GRACEFULLY, *supra*, at 77; Karen C. Burke & Grayson M.P. McCouch, *Social Security Reform: Lessons from Private Pensions*, 92 CORNELL L. REV. 297, 308–10 (2007); Camerer et al., *supra* note 17, at 1227–29; Edward A. Zelinsky, *The Defined Contribution Paradigm*, 114 YALE L.J. 451, 523–24 (2004).

271. *See* Chetty et al., *supra* note 14 (concluding that one reason automatic contributions to savings are more effective than price subsidies is that "policies that influence the behavior of passive savers have lower fiscal costs, generate relatively little crowd-out, and have the largest impacts on individuals who are paying the least attention to saving for retirement").

272. *Id.*

273. *Id.*

274. *Cf. id.* at 38–39 (discussing how a government price subsidy has a small impact on savings because the subsidy is an inframarginal transfer with a low interest elasticity of savings for active savers).   Chetty et al. also claim that tax incentives don't increase net savings even among attentive households because in their sample, tax incentives just encourage investors to move money from existing savings into tax-favored accounts. *Id.* at 43.   This is an important result, but it doesn't necessarily imply that the incentives are fruitless. Eligible, retirement-savings vehicles may be much stickier than other savings—among other reasons, because there is a statutory penalty for withdrawal.   If the government's goal is long-term savings, moving money into these stickier accounts may, therefore, still be a somewhat good investment.

275. Or, of course, the government could spend the $125 billion in some other way, if the alternative generates greater welfare gains than the tax cut.

set-aside out of current earnings as the equivalent of a 6% tax.[276] That might be a bigger effective hike than any cut that could accompany the $125 billion windfall.[277]

Chetty et al. also appear to assume that switching away from the 401(k) carrot will better align income effects, but that isn't necessarily the case. They echo a common criticism of carrots for retirement, which is that increases in household wealth tend to stimulate consumption, while the goal of the policy is to encourage savings and, therefore, to reduce current consumption.[278] As we have seen though, it is possible that a very well-targeted default could also be perceived as expanding the household's budget. Workers could see their returns to labor as higher, since they will not be wasting as much money on short-term temptations. So, in short, a more complete assessment of their proposal requires us to know more about how inattentive investors respond to default savings.[279]

Perhaps a central theme to both the soda and retirement examples is that the labor-supply effects of a surprising instrument depend on the nature of the error individuals are making. When what is happening is a failure of will, rather than knowledge, labor supply seems most likely to increase. In this scenario, some households know that they are getting a valuable commitment device from the government and recognize the improved budget allocation that device allows them. In contrast, when the error is a mistake of attention or understanding, families could well reduce their labor in response to the nudge because they do not see that the government has actually made them better off. Future empirical work devoted to better identifying how people are going wrong could therefore have significant policy implications.

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276. *See* Louis Kaplow, *Myopia and the Effects of Social Security and Capital Taxation on Labor Supply* 1–2 (Nat'l Bureau of Econ. Research, Working Paper No. 12452, 2006), *available at* http://www.nber.org/papers/w12452 ("[E]ven an actuarially fair social security retirement scheme . . . might be imagined to have similar effects to a current tax on labor if individuals are significantly myopic . . . .").

277. Chetty et al. also suggest that employers could be convinced to offer default retirement accounts with relatively small government incentives, perhaps just enough to cover the costs of administration. *See* Chetty et al., *supra* note 14. That, too, is unclear. If employers currently capture some or all of the benefit of the government subsidy, persuading them to agree politically to the swap would likely require a promise to replace much of the current savings. Of course, Chetty et al. might argue that since workers seem not to care about retirement savings, we might think that employers cannot save much in the way of lower salaries, and therefore cannot capture much of the subsidy. But if that is true, then workers would likely perceive default savings as a tax, which means that the social welfare benefits of their proposal are smaller than they suggest.

278. GRUBER, *supra* note 32, at 650.

279. Another complication in the analysis is that shifting income from one period of life to another also alters the marginal utility of a dollar for the worker. This factor can interact with myopic preferences in complex ways. For a more complete discussion, see Kaplow, *supra* note 276, at 4–13.

C. Pollution

Regulators and inventive commentators have proposed and sometimes even road-tested a variety of nudge-like instruments for reducing carbon and other forms of pollution.[280] Some of these interventions have been aimed at consumers, such as the various kinds of cues and defaults to reduce household energy consumption championed by Richard Thaler and Cass Sunstein and by Ian Ayres.[281] Although it's unclear that even in combination all the proposed climate nudges could achieve the needed levels of carbon reduction,[282] energy-conserving nudges look to be at least a valuable component of any strategy. Consider first the household-level nudges, such as "smart" energy meters that offer instant feedback to households on their energy usage.[283] It seems pretty straightforward that these kinds of efforts are preferable to carrot transfers, such as paying families to adopt conservation strategies, subsidizing weatherproofing, and so on. Given the potentially vast number of inframarginal claimants for such subsidies, the nudges almost certainly cost less, and either way will have a lesser unwanted income effect on household energy consumption.

Less intuitively, the constellation of nudges could outshine a carbon tax. At first glance, the nudges seem to sacrifice any possible revenue recycling benefits from the carbon proceeds. But nearly all carbon-tax proposals include efforts to mitigate the severe regressivity of taxes on carbon, which function as a broad-based sales tax due to the energy involved in manufacturing and transporting nearly any consumer good.[284] In many proposals, most or all of the revenues from the carbon tax or its equivalents (such as the 2009 cap-and-trade bill I mentioned earlier) would be devoted to cash rebates for low-income households, making the carbon tax close to transferless.[285] With some experiments, the nudges could be matched to a shadow price, allowing them to approximate the informational

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280. Vandenbergh et al., *supra* note 29, at 763–79.

281. THALER & SUNSTEIN, *supra* note 8, at 257–61; AYRES, *supra* note 8, at 138–42.

282. For consideration of that question, see Thomas Dietz et al., *Household Actions Can Provide a Behavioral Wedge to Rapidly Reduce US Carbon Emissions*, 106 PROC. NAT'L ACAD. SCI. 18,452, 18,452 (2009) (estimating that behavioral changes can reduce U.S. emissions by 7.4% over the next decade).

283. Leslie Kaufman, *Utilities Turn Their Customers Green, with Envy*, N.Y. TIMES, Jan. 30, 2009, http://www.nytimes.com/2009/01/31/science/earth/31compete.html?_r=0.

284. *E.g.*, Gilbert E. Metcalf & David Weisbach, *The Design of a Carbon Tax*, 33 HARV. ENVTL. L. REV. 499, 514 (2009); David A. Super, *From the Greenhouse to the Poorhouse: Carbon-Emissions Control and the Rules of Legislative Joinder*, 158 U. PA. L. REV. 1093, 1190–96 (2010).

285. For discussion of several alternatives, see Terry Dinan & Diane Lim Rogers, *Distributional Effects of Carbon Allowance Trading: How Government Decisions Determine Winners and Losers*, 55 NAT'L TAX J. 199, 205–06 (2002).

benefits of the carbon tax.[286] So on these two traditional criteria, nudges and taxes are similar.

Alternately, if the carbon tax does not include a rebate or rebates only a portion of poorer households' average costs, nudges could present a trade-off between revenues and fairer distribution. A nudge does still arguably impose costs on some families—those who must exert effort to avoid or ignore it. For instance, with greater feedback I might feel bad that I am using too much energy. But these deadweight losses are more likely to be equitably distributed across households rather than being borne most heavily by the poorest. It certainly could be that the subjective mental costs of avoiding energy-conserving nudges are greater for individuals with less wealth, but it is not immediately obvious why that would be so. Early empirical evidence on the distribution of the costs of mental effort are unclear, with one or two papers actually finding that richer people seem to view effort as more costly.[287]

So far, nudges and carbon taxes are roughly equivalent, but nudges are probably better targeted in a couple of different respects. Even with rebates, households retain a marginal incentive to conserve energy under a carbon tax since, if my rebate is determined by everyone else's average costs, I can come out ahead by being thriftier than they are.[288] Again, if government cannot readily connect this marginal incentive with my effective wealth, then a marginal dollar in incentives will overmotivate the poor while undermotivating the very rich. Many conservation nudges in contrast can be designed to affect primarily those who need greater interventions. A thermostat set to automatically lower temperatures on winter evenings is more likely to change the behavior of households who are inattentive to energy use than those who are already paying attention. These are also families who may well derive some additional internality benefit from the nudge.[289]

A final factor to consider is crowd-out. Even if Glaeser is right that in an economic sense nudges are every bit as "coercive" as taxes, not everyone may see things the same way.[290] As we saw earlier, express dollar-denominated incentives tend to replace other intrinsic motivation, but

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286. Another important goal of carbon taxes is to not only reduce overall energy consumption but also to shift the sources of energy to less carbon-intensive uses. Nudges can also be designed to encourage switching. For instance, in addition to reporting total usage, smart meters could report the mix of sources being drawn from the grid and allow the household to dynamically adjust which source it prefers.

287. *E.g.*, Jacob Goldin & Tatiana Homonoff, *Smoke Gets in Your Eyes: Cigarette Tax Salience and Regressivity*, 5 AM. ECON. J.: ECON. POL'Y 302, 331 (2013).

288. *See* KAPLOW, *supra* note 58, at 2–3 (explaining that rebates do not change first-best analysis of Pigouvian taxes).

289. Carbon taxes could likewise help the family to better prioritize its spending, but at some overall cost to them.

290. *See* sources cited *supra* note 18.

nudges might not.   So carbon taxes could reduce altruistic energy conservation, while nudges might leave it unchanged or even improve it. Nudges might even help altruistic but low willpower individuals achieve the greater conservation levels they desire.[291]

D.   Positive Externalities

Positive externalities offer a particularly fertile area for developing new nudges. For the most part, carrots are the dominant U.S. instrument for encouraging many important positive externalities, ranging from copyright protections for artists to tax deductions for charitable contributions and research and development.[292] As I suggested earlier, in many cases nudges can replace carrots in instances where sticks are problematic.

Charitable contributions are a possible example. Many of the tools others have designed for pension savings could also be employed for charitable giving. For example, employees could by default have a small portion of their earnings in excess of a certain threshold distributed among a short list of charities they had previously selected—say, 3% of income above $40,000.[293] Employees also could commit to donating a portion of future earnings, as Thaler and Sunstein suggest.[294] More radically, and taking a cue from Germany, the United States could collect donations for charities through the tax system without subsidizing them.[295] Realized gains on investment properties could be "taxed" an extra few percentage points unless the taxpayer opts out, with the revenues flowing to their designated charities.

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291. Sunstein, *supra* note 214 (manuscript at 11–12).

292. *See* Galle, *supra* note 27, at 840 ("[C]arrots are commonplace—and more are, shall we say, sprouting up all the time.").

293. The mean itemizing household currently donates about 2% of personal income to charity. STAFF OF JOINT COMM. ON TAXATION, 113TH CONG., JCX-4-13, PRESENT LAW AND BACKGROUND RELATING TO THE FEDERAL TAX TREATMENT OF CHARITABLE CONTRIBUTIONS 45 (2013). If the employee never gets around to designating any beneficiary organizations, the firm could select them or the money could be distributed to charities like the United Way that do the choosing for their donors. A critic of the proposals might argue that the proposals somewhat arbitrarily cap the amount of "subsidy" the government offers. In contrast, the deduction allows donors to determine the amount of matching dollars the government will provide without limit as long as annual contributions do not exceed 50% of adjusted gross income. That is accurate, but note that it isn't inevitable that the deduction will always have this advantage. Several serious legislative proposals over the past few years would cap the annual amount of subsidized contributions for each donor. *See* ROGER COLINVAUX ET AL., EVALUATING THE CHARITABLE DEDUCTION AND PROPOSED REFORMS 12 tbl.5 (2012), *available at* http://www.urban.org/Up loadedPDF/412586-Evaluating-the-Charitable-Deduction-and-Proposed-Reforms.pdf.

294. THALER & SUNSTEIN, *supra* note 8, at 231–32.

295. For an overview of the German system, see Stephanie Hoffer, *Caesar as God's Banker: Using Germany's Church Tax as an Example of Non-Geographically Bounded Taxing Jurisdiction*, 9 WASH. U. GLOBAL STUD. L. REV. 595, 601–06 (2010). Of course, aiding collection is itself a bit of a subsidy, but a much smaller one than the charitable contribution deduction currently offers.

Charitable nudges along these lines are likely superior on deadweight loss terms to the current income tax deduction for charitable contributions, while offering a somewhat less useful income effect than the deduction. Obviously the nudge would not reduce government revenues to the extent the deduction does.[296] As with retirement savings though, it is possible that donors could view the default as reducing their real returns to labor, resulting in deadweight loss that mimics the cost of the lost revenue. Donors who perceive the donation as a loss could also see themselves as poorer, reducing their demand for charity. And of course the donor pays a higher tax than she would with the deduction in place, which could further diminish her demand.

The nudges have other advantages as well. They are almost certainly better targeted than the deduction, much of the value of which is presently claimed by donors who likely would give a substantial amount regardless of the subsidy.[297] Unlike the present design of the deduction, a nudge does not reduce the progressivity of the tax system.[298] Another criticism of the deduction is that, because it offers larger rewards for higher income givers, it tends to produce a charitable sector slanted towards the interests of the rich.[299] I have also argued that, unless charities can more firmly be separated from the political sphere, the deduction distorts our politics.[300] Like a credit, the nudges I mentioned would somewhat mitigate these tendencies, though of course wealthier donors will still have more to give.

Similar nudges could also be used to supplement or replace the estate tax and its accompanying deduction for charitable bequests.[301] Though the purposes behind the income tax deduction for charitable contributions have been closely interrogated by commentators, the estate-tax deduction has mostly escaped scrutiny.[302] Most of those who have examined it are generally cheerful about its effects: in addition to subsidizing charities, it

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296. *See* STAFF OF JOINT COMM. ON TAXATION, *supra* note 293, at 44 tbl.2 (estimating $37.6 billion in 2012 federal tax savings for charitable contributors).

297. *See* MOLLY F. SHERLOCK & JANE G. GRAVELLE, CONG. RESEARCH SERV., R 40919, AN OVERVIEW OF THE NONPROFIT AND CHARITABLE SECTOR 49 (2009) (stating that the charitable contribution tax subsidy, based on one estimate, induces $0.50 of giving for each $1.00 of revenue loss).

298. *See* STAFF OF JOINT COMM. ON TAXATION, *supra* note 293, at 36 ("[T]he charitable contribution deduction reduces a taxpayer's after-tax cost of giving by relatively more, the higher his marginal tax rate."). Note, however, that the regressivity of the deduction could be offset by increasing tax rates for the income brackets of individuals who tend to donate more. COLINVAUX ET AL., *supra* note 293, at 10.

299. Mark P. Gergen, *The Case for a Charitable Contributions Deduction*, 74 VA. L. REV. 1393, 1405–06 (1988).

300. Brian Galle, *Charities in Politics: A Reappraisal*, 54 WM. & MARY L. REV. 1561, 1600–03 (2013).

301. *See* 26 U.S.C. § 2055(a) (2006).

302. Miranda Perry Fleischer, *Charitable Contributions in an Ideal Estate Tax*, 60 TAX L. REV. 263, 264–67 (2007).

serves to break up dynastic wealth, much like the estate tax generally.[303] That is true, but the two instruments get there in very different ways—most obviously, one deposits money into the Treasury, while the other does not.[304] Whether the remnants of dynasty should be allocated by the public or the dynasts seems like it should be a question of some interest.

All that I want to say about the institutional design of dynasty-breaking here is that nudges represent a third possibility. With nudges, the choice of how to allocate wealth are framed and influenced by the public's agents while the ultimate choices remain in the hands of donors. If the nudge replaces the estate-tax deduction, we must decide whether the incremental loss of private control and the deadweight losses to those who do not surrender it are worth the revenue gains. Alternately, the nudge (if effective enough) could replace the estate-tax system altogether. Then the question would be whether the incremental *gains* in private control are worth the lost dollars.

Conclusion

I have attempted here to offer the first extended consideration of the relative efficiency of nudges and other surprising regulation alongside the more traditional price-instrument and quantity-regulation alternatives. As with any initial academic forays into untrodden ground, no doubt I have made some missteps or overlooked some important areas for exploration. For now though, it looks as though present widespread skepticism of nudges and other surprising new policies may be misplaced. As a result, New York's soda law and many other forms of asymmetric regulation may merit closer consideration than others have so far been willing to offer. My arguments also warrant at least some reconsideration of older regulatory forms, such as prison or command-and-control regulation, whose inferiority to price instruments has become a central tenet of law and economics.

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303. *E.g.*, James R. Repetti, *Democracy, Taxes, and Wealth*, 76 N.Y.U. L. REV. 825, 856 (2001); *see also* John G. Simon, *Charity and Dynasty Under the Federal Tax System*, 5 PROB. LAW. 1, 33 (1978) ("[I]t is doubtful that the charitable deduction results in a less egalitarian distributional pattern than what we would have in a world without deductions."). *But cf.* Fleischer, *supra* note 302, at 276–83 (agreeing with this point but cautioning that it does not explain all the legal features of the existing deduction).

304. *Cf.* Mark L. Ascher, *Curtailing Inherited Wealth*, 89 MICH. L. REV. 69, 135–36 (1990) (suggesting that an estate-tax deduction might be justified because it diversifies providers of public goods); Ray D. Madoff, *What Leona Helmsley Can Teach Us About the Charitable Deduction*, 85 CHI.-KENT L. REV. 957, 965–66 (2010) (pointing out that a charitable estate-tax deduction allows the very wealthy to effectively control use of government funds).