

Thinking About Tax

Edward J. McCaffery and Jonathan Baron

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Abstract

Behavioral economics and cognitive psychology have demonstrated that people deviate from ideal precepts of rationality in many settings, showing inconsistent judgment in the face of framing and other formal manipulations of the presentation of problems. This article summarizes the findings of original experiments about subjects' perceptions of aspects of tax-law design and argues for the relevance of behavioral perspectives to the understanding and improvement of real-world fiscal systems. We show that in evaluating tax systems, subjects are vulnerable to a wide range of heuristics and biases, leading to inconsistent judgment and evaluation. The prevalence of these biases suggests that there is room for skillful politicians to manipulate public opinion, and that tax-system design can be volatile on account of the possibility of eliciting preference reversals through purely formal rhetorical means. More troubling, the findings suggest a likely and persistent wedge between observed and optimal public finance systems.

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1 Introduction

This article reports and analyzes the general results of a series of experiments we have conducted over the past several years, testing for the consistency of subjects' perceptions of issues of relevance to tax and public finance. The results strongly suggest that ordinary citizens suffer from a wide range of biases in understanding basic features of tax-law design and reform, akin to the perceptual biases far more commonly studied in private market domains, such as in the evaluation of risky choice (Kahneman & Tversky 1984, Tversky & Kahneman 1986) or in regard to the understanding of consumer finances (Thaler 1980 and 1985).

Commons sense as well as sophisticated social science confirm that we all make routine errors in judgment and decision-making. In private markets, however, the consequences of these heuristics and biases can be limited. Arbitrage mechanisms, including the stock market for financial assets and competition itself for consumer goods, allow some to profit from the biases of others. Private actors can capture the gains from trade, so to speak, in laying bare cognitive illusions and inconsistencies, with overall prices showing little effect (but see Barberis and Thaler, forthcoming, for a discussion of the limits of arbitrage even in private markets). In the public sector, in contrast, the absence of any simple, general arbitrage mechanism, such as a market — indeed, the absence of any clear incentive to develop such a mechanism — gives reason to believe that the adverse effects of cognitive biases can persist for long periods of time. In sum, “debiasing” has the structure of a private good in private markets, but a public good in public settings — predictably undersupplied in the latter.

As a result of the confluence of heuristics and biases on the one hand and the absence of any general arbitrage mechanism on the other, public finance can be sub-optimal. The resolution of public finance matters can be fragile, for example, because of the potential for framing manipulations to lead to citizen preference reversals. Worse, there is reason to believe that persistent inefficiencies and inequities can result from the interactions of political systems and cognitive error. In terms of equity, our experiments suggest that the amount of redistribution — the bottom-line consequences of tax and spending programs on the distribution of wealth and well-being — can turn on purely formal matters. Similarly, in terms of efficiency, tax and spending systems can be preferred for purely “optical” reasons, notwithstanding real costs in terms of transactions costs and deadweight losses. In such cases, real

wealth is left on the table, an homage to our illusions.

Before we present the experimental findings, we set forth some background on the disciplines and subject matters in play.

1.1 Cognitive Heuristics and Biases

Modern economics is based on a rather simple set of axioms about subjects' rationality. Perhaps the most basic tenet of the standard theory is consistency: people should not change their preferences based on irrelevant matters such as the purely formal labeling of a state of affairs (Kahneman & Tversky, 1984).

But they do. The field of behavioral economics or cognitive theory, with important roots in the "bounded rationality" work of Herbert Simon (1955), has shown that individuals deviate, often systematically, from ideal precepts of rationality. Daniel Kahneman and Amos Tversky played significant roles in expanding the field and its insights (Kahneman & Tversky 1974, 1979, 1984), which achieved a more mature status with the awarding of the Nobel Prize in economics to Kahneman in 2002. For good general background on the field, see Kahneman & Tversky 2000, Baron 2000; for general applications to law, see Sunstein 2000.

Behavioral economics or cognitive psychology rests on social scientific observations of actual human judgment and decision-making. Various types of deviations from ideal rationality have been chronicled. For a few examples:

- *framing* refers to the effect whereby the same question or choice set, described differently (as in "half empty" versus "half full"), can elicit different answers (Tversky & Kahneman 1986, Levin, Schneider & Gaeth 1998);
- the variously described *endowment affect*, *status quo bias*, or *reference-dependent utility* refers to the fact that losses from the status quo are weighed more heavily than otherwise-equivalent gains, even after controlling for wealth effects, and thus evaluations and choices vary with the specification of the "status quo" or "reference point" (Kahneman, Knetsch & Thaler 1991, Bateman et al. 1997);
- *over-generalized heuristics* include extensions of principles that serve good purposes most of the time to situations where they seem to cause

harm, for example, the favoring of harmful omissions over less harmful acts (Spranca, Minsk & Baron, 1991);

- *distortion of probabilities* refers to a set of phenomena where subjects make decisions as if they distorted stated probabilities, and, when they are not given numerical probabilities, their probability judgments, and decisions based on them, are inconsistent or even incoherent (Kahneman & Tversky 1979, Rabin 2000, Tversky & Fox 1995);
- *distortion by desires* refers to a set of results in which beliefs (or probabilities) are distorted by desires or motives, including “wishful thinking” and “self-serving bias” (Babcock et al. 1995); and
- *judgment biases* are a class of very general distortions of numerical judgment, a prime example being under-adjustment after anchoring on a salient value (Tversky & Kahneman 1974, Chapman and Johnson 1994).

The list goes on (see Baron 2000).

Skepticism has reigned in some quarters in the face of this catalog, on two fronts. One involves the grounding of the positive, descriptive observations of the field in a more general, foundational theory of how people decide. Cognitive theory is a “skeleton of empirical facts around which a theory is draped,” according to one leading practitioner of the field (Camerer 1990, at 792). The early attempts of Kahneman and Tversky (1979) to generate a grand theory of the field, in the guise of “prospect theory,” have not been altogether successful (McCaffery, 1994a; but see Camerer, 2000). Such explanations capture some but not all of the cognitive phenomena now known to exist, and fail to give a “deep” explanation, as the emergent fields of neuro-cognition or evolutionary, adaptive psychology might one day provide.

But the absence of system does not mean the absence of truth. If people really do think in ways that deviate from ideal precepts of rationality, then social science or political theory that aims to take into account how people think should consider the findings of contemporary behavioral psychology and economics (McCaffery, 1994b). Much of our work has coincided with the growing realization of other researchers that at the center of many heuristics and biases is what we term an *isolation effect* (Camerer, 2000; Read, Loewenstein & Rabin 1999; McCaffery & Baron, 2003). Subjects often focus on one especially salient aspect of a choice or evaluation problem

and ignore or fail to integrate other less salient items. The result can be a function of framing and salience (reacting solely to the most prominent feature of a problem or decision set); an overgeneralized heuristic (such as ignore irrelevant information, applied in a setting where the ignored information is relevant); a normative sense of constraint (decide only what you are being asked to decide); or yet other factors (McCaffery and Baron 2003). In a wide range of cases the isolation effect leads to inconsistent judgment and decision-making.

The second ground for skepticism involves translating the objective, descriptive matters into a normative, prescriptive set of policy recommendations. We address this concern at the conclusion of the present essay.

1.2 Tax

Our experiments have concerned taxes broadly conceived, and have generally been set up with the American tax system in mind.

Under any conception, taxes today are large. In the United States, taxes account for approximately one-third of Gross Domestic Product (GDP), a figure actually low by the standards of other developed countries. At the highest level of generality, taxes have two dimensions: their magnitude and their distribution. Distribution is a function of the tax's base and its rate structure.

The United States today (as other developed countries) has multiple taxing jurisdictions and multiple taxes. The largest taxing jurisdiction is the federal system, and the largest single tax is the personal income tax. A close second in magnitude is the social security or payroll tax system. A distant third is the corporate income tax (U.S. Census Bureau 2003, at table no. 481).

On the state and local level, the largest tax in the aggregate is the sales and use tax, followed by property and income taxes (U.S. Census Bureau, 2003, at table no 442).

Our experiments have asked about the appropriate level as well as distribution of taxes, specifically the appropriate degree of progression in the tax system. We have asked such questions in the context of family structure (whether or not a couple is married, whether or not they have children); broad tax-law design (whether there is one tax system or two, and what the properties of the current system(s) are); and also relative to the funding of public, or potentially public, goods. We have investigated attitudes towards

more specific features of tax-law design, such as the accommodation (or not) of children and marriage. We have also explored the various reasons behind taxes — the provision of public goods, redistribution in and of itself — as well as attitudes towards government revenue-raisers whether or not they are commonly conceptualized as “taxes.”

1.3 Heuristics, Biases, and Tax

Why care about heuristics and biases in tax? There is a still-raging controversy as to whether or not the insights of behavioral economics matter, or whether, instead, a social science such as economics can proceed to model real-world problems “as if” subjects were fully and ideally rational. One hope for reconciling theory and practice comes from the presence of various arbitrage mechanisms in the real world, most importantly, the market and the general forces of competition. Even if some — most? — economic actors are irrational, as long as markets clear at the margin with rational actors, prices can be efficient, and all can live in an economic setting as if all were rational. There is, however, good and mounting evidence not to believe this simple happy tale (Barberis & Thaler forthcoming).

Be that as it may in the *private* sector, there is simply no market at all in the public sector — indeed, “public” finance can be defined as the study of nonmarket economic mechanisms. While political entrepreneurs, groups, parties and other actors may attempt to reveal and exploit inefficiencies in socio-economic processes, the returns to them from this activity are uncertain at best, and the costs high. In the classic language of welfare economics, arbitrage mechanisms are *private goods* in private financial markets, where the gains from counter-balancing the irrational biases of others can be exclusively captured by the arbitrageur. But any parallel mechanism in the public sector would be a *public good*, whose benefits would inure to the society at large, non-exclusively. Welfare economics suggests that such a public good will be under-supplied, even if an effective arbitrage mechanism could be discovered (about which we shall have more to say below). Hence, people’s heuristics and biases may be more problematic, in a specifically welfarist conception, in public than in private finance.

Consider as a thought experiment the existence of “hidden” fees or costs in the two sectors. Administrative charges and bid-asked spreads on mutual funds are two such hidden costs in private financial markets. These are problematic, to be sure, but they are also small, and diminishing; competition

alone has brought them down. Now consider, as we have, the role of “hidden” taxes in the public sector. These are quite large, indeed, and growing. When it turns out that no one is quite certain who pays a tax, such as the corporate income tax, the tax ends up being attractive, without obvious opponents (Arlen and Weiss 1994), an effect that can lead to a larger government, *ceteris paribus* (see Hines and Thaler 1995 on the so-called “flypaper effect,” whereby government grows with new revenue sources) (McCaffery 1994b). It is not obviously in anyone’s private interest to lay bare the illusion.

Our most general hypothesis is that we expected to find a wide range of heuristics and biases in people’s understanding of and attitudes about tax. The general complexity of the subject matter, the low benefits for any individual to obtain on a personal level from fully understanding it, the absence of any general, widely available mechanism to debias or educate people about tax, and the lack of incentives for lawmakers to implement any debiasing or arbitrage mechanism in any event, can all be expected to, if anything, make the usual heuristics and biases more acute in the field of tax.

2 Experimental Method

We followed a similar procedure in all of the experiments reported below.

About 50–200 subjects, depending on the study, completed a questionnaire on the World-Wide Web. Subjects were paid \$3 or \$4 each. Subjects came to the studies through postings on various Web sites or Usenet news groups, or through prior participation in other studies. Subjects were paid by check (after some minimum amount was accumulated), and they had to register their address and (for U.S. residents) their social security number in order to get paid, but they identified themselves only with their email address after they registered, and the email address was stored separately from the data, to assure privacy and anonymity.

Consistent with standard methods in cognitive psychology, our experimental designs were all within-subject (Baron, 2000). That is, we are generally testing whether or not the very same people, asked the same question in different ways, react differently. In our cases, the null hypothesis is simply that subjects should be consistent — and we find repeatedly that they are not, with strong statistical significance. Problems such as selection bias, common to across or between-subject analysis, standard in public opinion research, are not of much concern to us. Our interest is in the existence of incon-

sistencies, and their nature. In most cases, we found inconsistencies heavily tilted in one direction, and consistent with the predictions of prior theory: subjects prefer policies described as “bonuses” to the self-same policies described as “penalties,” hidden to transparent taxes, rules whose “neutralities” were manifest as opposed to the same rules whose “non-neutralities” were transparent. In such cases, we can assert with some confidence that these biases are likely widespread in the population — all the more so because they predict features actually evident in the U.S. tax system, giving ecological validity to our experimentation. In other cases, we found inconsistencies in both directions; when this happened, we are unable to say with certainty which direction will “win” in any particular population, but we can at least ask whether the direction is correlated with such variables as sex and age. As it happens, our subject pool is roughly representative of the adult U.S. population in terms of income, age, and education (Babcock et al., 2003), but not in terms of sex, because (for unknown reasons) women predominate in our respondent pool.

In terms of precise methods, the studies were programmed in Java-Script so that one case was presented on one Web page or screen, and subjects were required to answer all questions appropriately before proceeding to the next screen. After a brief introductory description and explanatory page, in which we gave pertinent background, subjects saw between 24-32 individual screens asking for their responses. We recorded the time spent on each response, and we usually eliminated subjects who went noticeably faster than everyone else (outliers, usually 2–3%). Many of our experiments have had internal checks to assure that subjects understand the questions, and answer in the appropriate range. We have found that an overwhelming percent of our respondents acted reasonably within objective parameters.

3 Heuristics and Biases in Tax

In this section, we canvass the results from many experiments we have conducted, following the general method sketched out above.

3.1 Penalty Aversion and the Schelling Effect

People do not like “penalties,” they do like “bonuses.” But in standard economics, these are simply two sides of the same coin: a bonus is the absence

of a penalty, a penalty the absence of a bonus. Thaler (1980) famously observed that real people will use cash to avoid a “penalty” on using credit cards to buy gas at the pumps, but will fore-swear the cash and use credit cards when it is “only” a matter of not getting a bonus for using cash — with both choices on the very same facts (for example, \$1.90 for cash, \$2.00 for credit card).

The problem abounds in tax. A child bonus is a childless penalty, a marriage bonus is a singles penalty, and so on. We hypothesized that subjects would have a more positive impression of a policy stated in its “bonus” than in its “penalty” frame. Further, following a classroom demonstration from Thomas Schelling (1981), we suspected that this *penalty aversion* would be exacerbated by progressive rates. Schelling asked his students if they thought that there should be a larger child bonus for the rich or for the poor. Students rather predictably answered for the poor. But Schelling next pointed out that this rule presumed a childless default; if we start with the assumption that people have children, what is needed is a childless penalty to achieve the same result. Should a childless penalty be steeper for rich or for poor? Students predictably, and quickly, reversed their preferences, opining that the penalty should be higher on the rich, in what we dub the *Schelling effect*, an interaction of penalty aversion and a certain progressivity illusion.

In McCaffery and Baron (in press), we found several instances of both penalty aversion and the Schelling effect, involving penalties and bonuses for marriage as well as for children (or childlessness). We presented items like the following:

A married couple with one income of \$25,000 pays \$3,000 in taxes. The same income earner, if not married, would pay a surcharge of \$2,000.

A married couple with one income of \$100,000 pays \$30,000 in taxes. The same income earner, if not married, would pay a surcharge of \$6,000.

For each item of this sort, another item had exactly the reverse situation, in which the taxes of the unmarried earners were \$5,000 and \$36,000, respectively, and the *bonuses* were \$2,000 and \$6,000, respectively.

We asked the subjects the following questions (with “bonus” substituted for “surcharge” when needed):

How fair is the allocation of the surcharge to high and low income taxpayers?	How fair is this surcharge on the whole?
Much too much for high income, much too little for low	As fair as possible
Too much for high, too little for low	Very fair
A little too much for high, a little too little for low	Somewhat fair
A little too much for low, a little too little for high	Somewhat unfair
Too much for low, too little for high	Very unfair
Much too much for low income, much too little for high	As unfair as possible

In every case, far more subjects showed the predicted pattern than the reverse pattern. That is, first, they judged bonuses as fairer than penalties, even though they were identical but simply described using different baselines (married or single, with or without children). Second, like Schelling's students, they judged the bonus as too high for high income and too low for low income, but they judged the surcharge (penalty) as too low for high income and too high for low income. We thus confirmed the existence of both penalty aversion and the Schelling effect in tax.

3.2 Tax Aversion

Penalty aversion is related to classic biases such as loss aversion; penalties seem like losses measured or evaluated from a status quo baseline, whereas bonuses seem like gains from a *different* status quo baseline. We suspected that people are also affected simply by what things are called, without any change in reference point. Labeling the very same monetary charge as a "tax" versus a "fee" or the like changes neither the starting point nor the ending point in terms of an individual's finances. For some people, however, and for some kinds of programs, we hypothesized that the label "tax" would be enough to arouse a negative reaction, with everything else held constant. (Compare Eckel, Grossman and Johnston, 2004, finding that an explicit labeling of an exaction as a "tax" leads to crowding out of charitable gifts, whereas non-transparency in the exaction (no label) does not.) The word "tax" itself implies a burden. Other words, such as "fee," imply a payment for something received in return. On the other hand, people may trust or

expect government to provide certain kinds of services, and they may rather pay for these services through “taxes” than through “fees.” Our principal hypothesis was that such labels would matter.

We did an experiment to assess the effect of simply calling something a tax (McCaffery & Baron, forthcoming). We asked how people thought payments should be made for various services: primary and secondary education, theft insurance, basic telephone service, mail delivery, basic health care, vaccinations, connection to a sewer (or equivalent), drinkable running water, trash collection, services of a fire department, nursing home care, social security (basic pensions), insurance for income loss from disability, unemployment insurance, and natural disaster insurance.

We contrasted cases in which a service was funded by government through a tax with otherwise identical cases — in their beginning and ending financial states — where the users of the service paid its provider directly without the government’s acting as an intermediary. We used the fifteen cases just noted, that we thought might differ in various factors: the status quo, whether the services are provided more efficiently by government or others, the subject’s perceived self-interest, the extent to which the rich should pay more, whether people differ greatly in their use of the service, and the extent to which they involve public goods (such as vaccinations, which can prevent the spread of diseases to others).

We also asked about attitudes toward the relevance of these factors in the real world. Of course, our hypothetical cases were not like the real world because we held many factors constant by assumption. But we suspected that subjects’ general attitudes may affect the way they respond to whether the mechanism is called a tax or not.

Questions differed in whether the way of raising funds was called a “tax” or a “payment,” and in whether the distributive properties of the tax/payment were lump sum (same for everyone), progressive (based on ability to pay), or based on use of the service in question.

We found that labels mattered. Subjects reacted differently to levies called a tax than to those called payments, even where the economics were identical (compare Eckel, Grossman & Johnston, 2004, there the comparison was between a “tax” and an unlabeled exaction.) In general, there was no overall preference for or against taxes. As we expected, however, particular goods or services differed in whether subjects favored taxes to pay for them. In some cases, such as social security, subjects may have considered that the very nature of the “service” varied with the payment mechanism. Those

significantly favorable for tax were fire, education, and social security. Least favorable were phone service and theft insurance.

The subjects also differed among themselves. Some subjects were, individually, consistently anti-tax; some were consistently pro-tax. This is consistent with other research showing that subjects fall into clusters in terms of their attitudes towards progressivity, with some liking flat taxes, others moderately progressive, still others steeply progressive ones (McCaffery & Baron 2003; Hite & Roberts 1991). These differences among subjects could be predicted from their attitude about which method was in their self-interest.

In sum, we found, as have others recently (Eckel, Grossman & Johnston, 2004), that calling something a “tax” affects people’s attitudes toward it, and their attitudes are predictable from properties of the service and of the subject. Some people are indeed anti-tax for some services, and others are pro-tax.

3.3 The Failure to Uncover Hidden Taxes

If people are tax averse, governments have an incentive to hide taxes in various ways. One is to call them something else, on account of the *tax aversion* bias just described: “user fees,” “surcharges,” and so on. Another is to make taxes indirect or hidden — nominally paid by some third party. We hypothesized that people would prefer such hidden taxes because they would not think through to the next step, in which they bore the true incidence of the tax. For example, when a business pays a tax, the money must come from somewhere. Much of what economics teaches us about the effects of taxation is fairly obvious to anyone who asks how various actors, such as managers, would react to a tax, but people seem not to think this far or this many steps ahead (a manifestation of a more general *isolation effect*).

Taxes can be partially or fully hidden. In the former case, the incidence of the tax is known or easily knowable, but hidden from the payer’s direct view: the employer’s “share” of social security contributions works this way. In the latter case, the ultimate incidence of the tax is not easily known or knowable; in fact, leading experts debate who, exactly, bears the real incidence of the tax. Corporate or business taxes of all forms are examples of fully hidden taxes. Now standard findings in prospect theory (Kahneman & Tversky 1979) and the endowment effect (Kahneman, Knetsch, & Thaler 1990) predict that subjects will prefer such hidden taxes to direct levies: they will not feel as if they are “losing” wealth because they never felt that they

were entitled to it in the first place. In the case of fully hidden taxes, as McCaffery (1994b) observed, government “deceit precedes receipt.” Behavioral economics suggests that hiding taxes is a good move for a government that wants to maximize its revenue while minimizing its’ subjects hedonic pain.

Partially or fully hidden taxes are simply a prominent example of a highly prevalent phenomenon in public finance: not all economic aspects of a particular problem or policy are typically equally in view. In virtually all cases in complex modern economics, any *direct* or partial equilibrium measure, such as a tax increase, is followed by one or more *indirect* or general equilibrium effects, such as changes in price or employment levels. Like taxes themselves, these indirect effects can be partially or fully hidden. Policymakers can play a role in obscuring or making more transparent these indirect effects. Once again, cognitive psychology and behavioral economics suggests that, for a combination of reasons turning on salience and loss aversion, what is less known is generally less hurtful. The underlying perceptual biases suggest that public finance systems will have a tendency to gravitate towards high-salient benefits and low-salient burdens. But hidden taxes and obscure indirect effects may have higher transaction costs and other inefficiencies than more transparent taxes. This can create a wedge between hedonic utility and wealth maximization, as discussed further in Section 4, below.

We conducted experiments that go beyond an endowment effect explanation to consider further why it is that individuals do not adequately focus on hidden taxes and other indirect effects, such as the rise in prices attendant on various tax-law changes. We considered various possibilities, namely that subjects:

- suffer from an isolation effect (McCaffery & Baron 2003, Camerer 2000, Read, Loewenstein & Rabin 1999, Kahneman & Lovallo 1993), paying attention only to data or issues immediately before them;
- overly discount future events, and/or are overly optimistic in their assessments of the likelihood of future bads affecting them (e.g., they believe hidden taxes will fall on “others”);
- ascribe moral motivations to direct but indirect effects; and/or
- are simply ignorant of certain public finance effects.

We carried out several experiments to test some of these hypotheses (McCaffery & Baron, 2004). Consistent with the general behavioral economics

literature, we expected subjects to focus on what was being asked in the most direct way, ignoring indirect or longer term effects. We expected subjects to prefer hidden to transparent taxes, and to ignore negative indirect effects unless these were made salient.

The first experiment in this series tested the hypothesis that people do not think ahead when they consider how to raise money for a good and how to pay for the good. In particular, they do not think about incentive effects and distributive effects, even though they do care about such effects.

We examined two dimensions of government action, taxing and spending. We looked at *raising* money (Raise) and *payment*(Pay) for four different types of insurance, such as health and life insurance, that could be provided either privately or by the government.

We compared raising money by an income tax, on the one hand, with raising it by a payroll or a business tax, on the other. We hypothesized that both because of tax aversion and their greater salience (lesser hidden-ness), people would tend to oppose an income tax until they thought about its redistributive effects, from rich to poor. We suspected that subjects might, conversely, favor a business tax until they thought about its effects on workers and consumers as well as managers and owners.

We also compared payment through tax deductions, on the one hand, with payment through tax credits or direct payment, on the other. We hypothesized that people would favor deductions until they thought about its redistributive effects, helping the rich more than the other two methods (compare the *Schelling effect*, discussed above).

Subjects were sorted into two groups. Each group received six screens about each of the four types of insurance, with Raise in the odd positions (1, 3, 5) and Pay in the even ones (2, 4, 6). All subjects saw the same baseline condition on screens 1 and 2, followed by two debiasing conditions. The order of the debiasing was counterbalanced: Group 1 got a debiasing screen in position 3 (for Raise) and 6 (for Pay); Group 2 in 5 (for Raise) and 4 (for Pay). The debiasing consisted of asking questions about the incentive and distributive effects of the options, and explaining the distributive consequences of using deductions. Our debiasing did not systematically lead people into any particular view. As we shall see, it did not do so, although, in general, it made people more positive toward taxes and payment methods that were better for the poor.

Our main hypotheses concerned attitudes toward raising the money through income taxes (vs. payroll or business) and attitudes against paying through

deductions (vs. direct payments or tax credits). We call these “favorable” attitudes (taking the point of view of the poor, a point of view that most subjects seem willing to consider). An income tax is redistributive when it is being used to raise revenues, but not when it is being used to subsidy private spending — deductions have a regressive effect in a progressive marginal rate tax system.

Figure 1: “Favorable” attitudes as a function of where debiasing occurred.

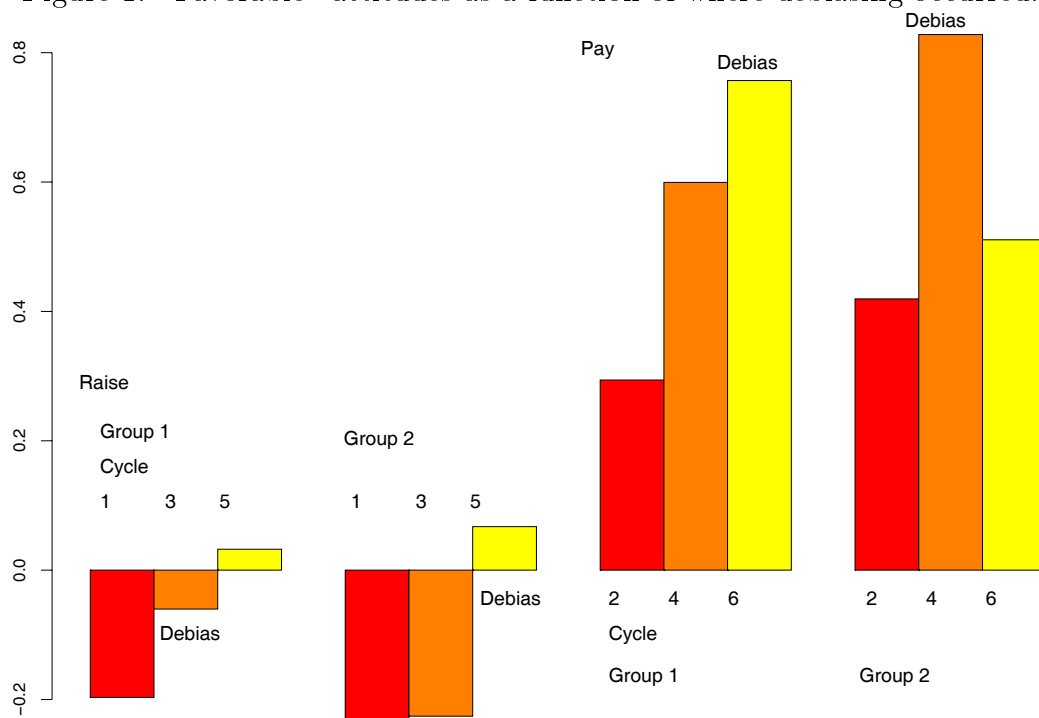


Figure 1 shows the proportion of favorable attitudes as a function of the sequence of trials, separately for Pay and Raise, and separately for the two groups of subjects, which differed in where the debiasing came in the ordering, as shown. In general attitudes were more favorable in the debiasing conditions than in the most comparable control conditions.

Note that subjects did not support raising the money through an income tax, on the whole. The income tax is the least hidden of all taxes. In part they believed that business taxes would fall mostly on the rich (and, indeed, our debiasing called attention to that possibility as well as the possibility

that business taxes would fall on workers and consumers), but also, perhaps, because business taxes are the most hidden of all. Payroll taxes are at least listed on pay checks. Indeed, what is most striking in Figure 1 is that subjects are *inconsistent* when it comes to redistribution, favoring it in the Pay condition but not overall in the Raise one, but *consistent* in opposing the income tax — they do not like the income tax as a vehicle to raise or to spend money. Indeed, an aversion to the income tax, *per se*, seems to trump a desire for redistribution.

In another experiment, we presented six policy changes, each with a beneficial direct (partial equilibrium) effect and a harmful indirect (general equilibrium) effect, or vice versa. First, we asked if people knew the direction of the effects, to get at whether ignorance mattered to evaluation. Then we asked about attitudes toward the proposal before and after telling subjects about the directions of the effects. Finally, we asked about their attitude if neither effect were intended by the policy-makers, to get at whether intent mattered to their evaluations.

The items were based on six policies, each presented in an “increase” (or create) format and a “decrease” (or eliminate) direction, and each with a corresponding direct and indirect effect, as follows (with the directions of the two effects corresponding to the policy change directions):

1. creation/elimination of a tax on business profits
Direct: more/less money available for government programs
Indirect: higher/lower prices for goods and services
2. creation/elimination of a tax deduction for interest on home mortgages
Direct: lower/higher cost of borrowing for homes
Indirect: higher/lower average price of homes
3. creation/elimination of a tax deduction for health insurance
Direct: larger/smaller number of people getting health insurance
Indirect: higher/lower average price of health insurance
4. creation/elimination of a tax deduction for bonds issued by cities or states (municipal bonds)
Direct: lower/higher tax rates for municipal bond owners
Indirect: lower/higher interest rates on municipal bonds
5. reduction/increase in income tax rates for everyone (with no change in present government spending)

Direct: increased/reduced amount of consumer spending

Indirect: reduced/increased ability of the government to fund programs in the future

6. increase/reduction in taxes on imported goods (tariffs or duties)

Direct: lower/higher number of jobs lost from foreign competition

Indirect: higher/lower average prices of goods

In terms of knowledge, subjects gave the correct answer for direct effects in 58% of the cases, thought there was no effect in 30%, and gave the wrong direction in 12%. For indirect effects, the respective percentages were 43%, 39%, and 18%. In sum, subjects had some, but imperfect knowledge of direct and indirect effects, with better prior knowledge of direct effects.

In the second part of the study, subjects were told about the indirect effects. We would expect this to move attitudes toward the proposals in a negative direction, because subjects did not always know about the effects. Indeed, the mean attitude favoring the policy (reversed when the policy was reversed, so that we expected positive numbers) was .44 in the first part, before the effects were described and .23 in the second part.

If subjects think that the direct effect of a policy is intended and therefore the proper basis of judgment, they will moderate their opinion of the policy when they learn that neither effect is intended (although both are anticipated). Using the data from all items, the attitude toward the final question was indeed more moderate, with a mean of .23, compared to .45 for the first attitude question in the second part.

All tax changes involve costs for some groups of people and benefits for other groups, though the groups may of course overlap. For example, a tax increase can provide benefits for those who benefit from government services, or for future taxpayers, if the increase is used to reduce the debt. But it also provides costs for those who pay the taxes, and for businesses (hence workers and stockholders) whose revenues may fall because of reduced spending. Specific taxes often directly help one group at the expense of everyone else. In a final experiment in this series, each policy change was associated with two beneficial consequences and two harmful ones.

In the first part of this final experiment, we asked people about the negative effects of a policy, in order to see whether inducing subjects to think about these effects would reduce the attractiveness of the policy. (We gave

the positive reasons in all cases, to make subjects think that there was some reason for the policy.) To test the effect of intention, we presented each policy with two beneficial outcomes and with the harmful outcome associated with the second beneficial outcome. We then asked (in the second part) whether subjects preferred the policy when it was justified by both stated reasons or just one of them. We asked this for both reasons.

Just asking subjects to consider whether the negative effects occurred, on the whole, reduced their support for the proposals.

Support also depended on subjects' answers, given that the questions were asked. Acknowledgment that a proposal causes bad effects reduces support for the proposal.

Intention to produce additional beneficial effects increased support for the proposal, as indicated by the two intention questions in the second part. In 39% of the responses the extra reason would increase support, and in 14% it would decrease support.

In sum, people often do not think about the indirect or longer-term effects of a tax when making initial judgments about its desirability, and, when they do think about such effects, they often get them wrong. Once they have been educated about these effects, they moderate their prior opinions somewhat but not fully. This gives some, limited hope for debiasing efforts. On the other hand, people often respond as if the motivations of lawmakers behind a policy matter, and not just the objective effects of the policy. This generates fear that rhetorically conveyed "intentions" can play a role in the evolution and shape of public policy, apart from objective realities.

3.4 Metric Effect and Progressivity Illusions

Throughout our experiments, we found interesting interactions between subjects' perception of or desire for progressivity — a norm of expecting the better able to pay more, in absolute and/or percentage terms — and other effects. Perhaps these begin with some basic inconsistencies over what "progression" even means. For example, subjects gave systematically different answers based on whether the question was asked using dollars or percents, in what we call a *metric effect* (McCaffery and Baron 2003 and in press). Subjects consistently wanted more progressivity when the matters were framed in percent rather than in dollar terms. A likely reason is not hard to surmise: there is a sort of progressivity illusion under dollars, because the high income pay more even under a "flat" percentage tax: at a constant 20% rate, a

\$100,000 household pays \$20,000 in taxes, whereas a \$20,000 household pays \$4,000.

The first two tables come from an experiment in which we asked subjects about their attitudes about both the level of taxation, as in Table 1, and the slope of its distribution, as in Table 2 (McCaffery & Baron, in press). There were four types of taxpayers: single persons, married equal-earner couples with incomes presented on a per person basis (Equal 1), married equal-earner couples with incomes presented per couple (Equal 2), and married one-earner couples, all with and without children. The experiment was concerned primarily with how subjects accommodated for marriage and children, but it also gives a good look at the metric effect.

We asked subjects simply to fill in blanks for how much they thought each household/couple ought to pay, at four income levels: \$25,000, \$50,000, \$100,000 and \$200,000. Sometimes we asked the subjects to use dollars, others times percents. Table 1 gives the mean responses across all income categories for the various household types, with the answers given in dollars converted into percent — that is, with the metric effect eliminated from the presentation of the results.

	Single	Equal 1	Equal 2	One-earner
Answer in dollars:				
No child	14.7	14.0	13.8	13.4
Child	12.4	13.3	12.5	11.9
Answer in percent:				
No child	17.5	17.6	17.3	16.5
Child	15.1	17.4	15.2	14.7

Table 1: Mean responses (in percent) to questions about fair taxes.

Note that the levels are consistently and significantly higher when the answers were given in percent.

Table 2 shows that the *slope* of desired progression is also higher when the question is asked in percent. There is a “progressivity” illusion, of sorts, when the values are given in dollars.

We see in Tables 1 and 2 that people support both higher and more steeply progressive taxes when they are thinking about taxes in percent as opposed to dollar terms. Combined with the *Schelling effect*, discussed above, and the *neutrality bias*, to be discussed next, these findings suggest that the “optics”

	\$25,000	\$50,000	\$100,000	\$200,000
Dollars	9.3	11.7	15.2	16.8
Percent	9.2	13.0	18.8	24.6

Table 2: Mean fair taxes (in percent) as a function of income.

of progressive marginal rates introduce instability into popular perceptions of tax systems. Candidates who favor progressive taxes ought to talk in percent terms, those who favor flatter taxes in dollar terms, and so on.

3.5 Neutrality Bias

A common norm in tax policy is “horizontal equity,” the idea that like taxpayers should be treated alike (Kaplow 1989, Kaplow and Shavell 2004). The trouble is that the application of the norm depends critically on whom or what is being compared. Often in tax, a policy that is “neutral” as between two sets of taxpayers is “non-neutral” vis a vis some other, third, set. We suspected that ordinary subjects would favor a policy more when its neutrality was emphasized than when it was not, what we term a *neutrality bias*. An obvious subject matter area to test this hypothesis is the taxation of households.

It is by now well established that a tax system cannot have progressive marginal rates, “couples” and “marriage” neutrality, all three at the same time (McCaffery 1997, Berliant and Rothstein 2003). Marriage neutrality means that the tax system is neutral toward marriages: If two people marry and their incomes stay the same, their tax does not change. Couples neutrality means that the tax system is neutral as to the division of taxable income within a married household: couples with the same income pay the same tax, regardless of the income difference between the two people. It is impossible to consistently favor marriage neutrality (opposing bonuses and penalties), couples neutrality, and marginal rate graduation.

A simple example illustrates. Imagine a basic tax system with a \$10,000 “zero” bracket, and a flat rate of 20% over that for individuals — that is, a progressive marginal rate tax. Imagine two couples, one with two \$10,000 earners, the other with a single \$20,000 one. If the same rate brackets apply to single persons as to couples, then the equal-earner couple pays a penalty on marriage; their combined tax goes from \$0 to \$2,000. If the “zero bracket” doubles on marriage, then the one-earner couple gets a bonus from marrying:

their combined tax goes from \$2,000 to \$0. Under either result, or anything in between, the law violates marriage neutrality. On the other hand, if married couples are allowed to pay taxes under the single persons rate structure — making for marriage neutrality — the two couples pay a different tax: the two-earners pay \$0, the one-earners \$2,000, in a violation of couples neutrality.

Despite the impossibility of having all three qualities (progressivity, couples and marriage neutrality), most people favor all three criteria.

We showed this in an experiment in which we asked people to say what taxes were fair, before and after relevant changes, such as getting married or changing the distribution of earned income within a couple from one earner to two, or the reverse. The experiment presented 32 conditions in a random order chosen for each subject. The design presented 8 types of change, each type in 2 different directions, crossed with 2 base income levels (\$20,000 and \$80,000 per year per person).

In some cases, we asked subjects to assume that the tax rate was fair before the change, and then to indicate what the rate should be after the change. In other cases, subjects provided fair rates before the change and after the change.

A major question was whether subjects had inconsistent attitudes, in the sense of favoring graduation, marriage neutrality (no penalty or bonus), and couples neutrality (no work penalty or bonus). Figure 2 shows how it is possible to test for this inconsistency based on some of the conditions, by looking at the changes from one state to another. Each arrow shows a possible effect. Each state shows two people and their incomes, in thousands of dollars. The sum of the two incomes is always \$40,000. Thus, for example, graduation means that the total tax paid by one single person making \$40,000 is larger than that paid by two single people making \$20,000 each.

Note that the sum of the Graduation-single change and the Bonus should equal the sum of the Penalty and the Work effect. Note that the Graduation effect as illustrated is a tax increase, the Bonus effect is a decrease, the Penalty is an increase, and the Work effect is (we assume) a decrease, amounting to a penalty for both spouses working (vs. one working).

Rearranging terms, we can see that:

$$\textit{Graduation} = \textit{Work} - \textit{Bonus} + \textit{Penalty}$$

For most subjects, the preferred rate of graduation was higher than predicted

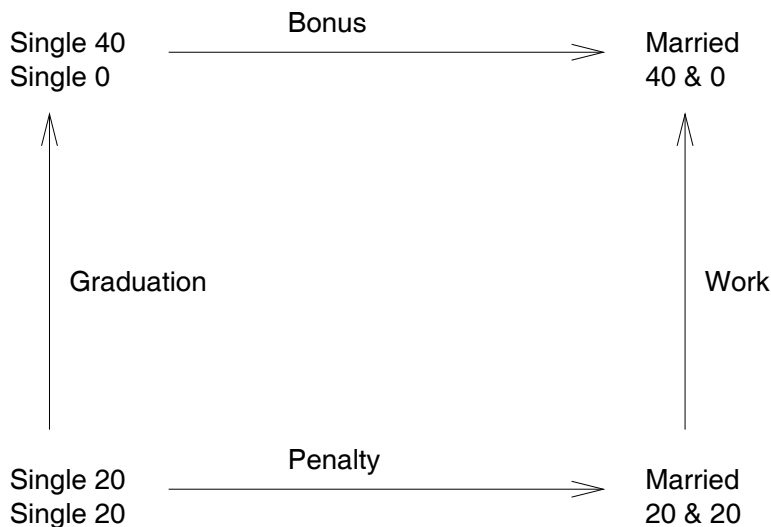


Figure 2: Possible bonus, penalty, and graduation effects

from the above formula. Even when we examined only the subjects who preferred exact neutrality for both couples and marriage, a significant plurality favored graduation (as opposed to the opposite), although both neutralities can only obtain simultaneously under a flat marginal rate system. People have inconsistent attitudes, opposing any effects of marriage or work within a marriage yet favoring graduated taxes.

In another study, we asked about different options for addressing marriage within a system of progressive rates (McCaffery & Baron, in press). Recall that a system with such rates cannot have both couples neutrality and marriage neutrality. Our experimental design featured four households: married and unmarried, one-earner and two-earners, each with a total income of \$40,000. We had four possible (and realistic) ways to accommodate marriage: separate filing, where people pay taxes as individuals whether married or not, and then joint filing at the singles rate, at double the singles rate, and (as the U.S. has generally done since 1969), somewhere in the middle. Separate filing preserves marriage neutrality but violates couples neutrality (one-earners pay higher taxes). Each of the other options preserves couples neutrality but violates marriage neutrality in a different way: Couples filing at the singles rate has only marriage penalties, filing at double-the-rate has only bonuses, and splitting-the-difference generates both bonuses and penalties.

In our experimental setup, we showed the effects of changing into and out of these different options. We had two focuses, based solely on our tabular presentation — how we grouped the four households. In the *marriage focus*, we paired up the two-earner households, married and unmarried, and the one-earner households, married and unmarried. We hypothesized that this focus would draw attention to marriage non-neutralities, making separate filing more attractive. In the *earners focus* we paired up the unmarried households, with one and two earners, and the married households, again with one and two earners. We hypothesized that this would focus attention on the couples non-neutrality and hence make separate filing look less attractive. In each case, results went in the direction predicted: that is, subjects preferred separate filing in the marriage focus to it in the earners focus; and subjects preferred each of the other options more in the earners' focus, in a clear demonstration of the *neutrality bias*. Points of comparison matter; changing them elicits preference shifts and reversals.

3.6 Disaggregation Bias

One of the striking features of the U.S. tax system in the last half century has been the rise of social security and medicare contributions, or payroll taxes. Such taxes now account for roughly 80 percent as much income as personal income taxes. The facts that the payroll tax is flat, even regressive, has led to an increasing number of criticisms, and suggestions that the system should be integrated with the income tax.

But it should not matter, were people fully rational, that any particular tax in a multi-tax system is regressive. Any level of progressivity in the payroll tax, for example, can be counterbalanced by changes in the income tax. As long as a policymaker has full degrees of freedom in one tax having the same base as another tax, she can effect the same global distribution of tax burdens as if she had control over the whole. It should not matter that taxes are split in two.

Yet it does matter. In a strong confirmation of the *isolation effect*, our experiments showed that subjects were apt to focus on the one tax they were asked to evaluate, not factoring in a parallel tax easily available to their recall.

In one experiment reported in McCaffery and Baron (2003), we simply asked subjects once again to fill in the blanks. After an initial page in which we gave instructions, stipulating that the bases of the “income” and “payroll”

taxes were identical, we presented a series of screens. Sometimes we listed a payroll tax, other times an income tax. For each tax, we had four levels and rates of graduation, across households with \$20,000, \$40,000, \$80,000, \$160,000, and \$320,000, including one 0 (no tax) option. In half the cases, we asked subjects to set a total distribution; the other half, we asked them to set only the “other” tax. In half the cases, we asked for the answers in dollars, in the other half in percent. This generated 32 screens (2 taxes given x 4 levels and rates x 2 (other/total) x 2 (dollars, percent)). There was no rational reason why the bottom-line responses — the overall tax system — vary at all. But they did.

Table 3 lists the mean tax rates, across income levels, converted into percent and total (where we were asking in dollars and/or about the “other” tax alone), to get the presentation here into a common metric:

Given rates on:					Response:				Mean
					Dollars		Percent		
\$20k	\$40k	\$80k	\$160k	\$320k	Total	Other	Total	Other	
Payroll tax given, Income tax response									
0	0	0	0	0	14.97	14.60	17.56	16.90	16.01
0	5	10	15	20	14.89	21.13	17.60	23.68	19.32
5	10	15	15	15	15.25	21.68	17.20	24.28	19.60
10	10	10	5	5	15.28	18.84	17.55	22.51	18.54
Income tax given, Payroll tax response									
0	0	0	0	0	15.66	13.24	17.02	16.15	15.52
0	5	10	15	20	15.44	20.35	17.13	22.01	18.73
0	8	16	24	32	16.00	24.13	17.79	27.36	21.32
10	10	10	10	10	14.75	18.71	16.92	22.11	18.12
Mean:					15.28	19.09	17.35	21.87	

Table 3: Total taxes in percent.

Table 3 reveals that both frames (other versus total, dollars versus percent) and the starting points mattered. The overall level or magnitude of taxation was, as hypothesized, higher when responses were in terms of the other tax than when they were in terms of the total tax ($t_{45} = 7.42$, $p = .0000$), with the interesting exception of the case in which the given tax was set at 0: what we call the aggregation frame mattered. (Ten subjects did not respond

differently at all when they were asked for total tax or the other tax. The results were essentially the same when these subjects were removed from the analysis.) The level of taxation was also higher when responses were in percent than in dollars ($t_{45} = 4.22$ $p = .0001$): what we call the metric frame mattered.

Subjects were insufficiently responsive to changes in the given rates. They anchored on whatever rates they were given and did not adjust enough to make all the rows the same. In particular, total taxes were lower when the given rate was zero than when it was not (for the first and fifth row vs. the mean of the others, $t = 6.65$, $p = .0000$; and t was almost as high when the ten non-responders were removed).

Table 4 shows graduation, the other broad component of a tax system, which we define as the slope of the percent tax as a function of income step, with each income step (i.e., each doubling of income) defined as one unit. This is logically independent of the level of taxation, shown in the prior table.

Given rates on:					Response:				Mean
					Dollars		Percent		
\$20k	\$40k	\$80k	\$160k	\$320k	Total	Other	Total	Other	
Payroll tax given, Income tax response									
0	0	0	0	0	3.73	4.47	5.99	5.99	5.05
0	5	10	15	20	3.89	7.38	5.85	9.20	6.58
5	10	15	15	15	3.83	5.75	6.03	7.16	5.69
10	10	10	5	5	3.80	2.70	6.05	5.43	4.50
Income tax given, Payroll tax response									
0	0	0	0	0	4.46	3.74	6.11	5.61	4.98
0	5	10	15	20	4.26	6.53	5.85	8.33	6.24
0	8	16	24	32	4.30	9.20	5.76	10.95	7.55
10	10	10	10	10	3.76	3.31	5.67	5.68	4.60
Mean:					4.00	5.39	5.91	7.30	

Table 4: Graduation (tax change for each step) as a function of aggregation frame

Once again, the frames mattered. Subjects could have — and to be consistent, should have — adjusted what they could to produce the same level

of graduation in each instance. They did not. Graduation rates were higher for percent than for dollars ($t_{45} = 5.78, p = .0000$), showing the effect of the metric frame. Subjects were also, as hypothesized, insufficiently sensitive to the extent to which the given, “other,” tax was graduated: the aggregation frame mattered. Subjects appeared to focus only on what they were asked to judge. The clearest comparison to illustrate this effect is between the 6th and 8th rows of the table, where the overall rate of the given income tax was the same, despite the difference in its graduation (and compare Table 3, where, even after adjustment, the level of taxation in these two conditions is about the same); yet subjects favored a far less graduated overall tax system when the given income tax was flat, in Row 8, then graduated, in Row 6 ($t_{45} = 5.77, p = 0.0000$).

This experiment revealed several of the biases we have discussed. The *metric effect* is manifest in the fact that the mean levels, in Table 3, and the slopes, in Table 4, are all higher in the percent columns than in the dollar ones. The *disaggregation bias* is evident in the fact that the “other” columns in Table 4, for both dollars and percent, are higher than the “total” columns. And an *anchor and adjustment* process is evident in the significant variation across the rows, and their correlation with the left-hand, “off-stage” tax. The wider series of experiments we conducted in this vein (McCaffery & Baron 2003) revealed several matters of interest to real-world tax system design. For example, subjects seem willing to consider higher taxes if there are more smaller taxes; negative tax brackets in one tax to offset positive brackets in others (as under the earned income tax credit in U.S. law) are salient and disfavored; and the total progression of a tax system may be a function of its size and constituent parts. We pick up several of these themes in the next series of experiments.

3.7 Masking Redistribution

When governments raise taxes by a progressive tax scheme and then pay for services that cost the same to rich and poor alike, the net effect is to redistribute income, a “cross-subsidy” through the provision of the good. The rich pay more, the poor less, both income classes benefiting the same. This is a paradigm example of the “bundling” together of two distinct governmental actions, allocative (providing the good or service in the first place) and redistributive. Were government simply to “privatize” or otherwise cut government services, without continuing the redistribution effected through

the tax and spend program, a greater burden would fall on those who are relatively poor. But, logically, the government can continue to redistribute resources through the tax system without the provision of the good or service. The disaggregation effect just described, however, suggests that subjects will not support a consistent level of redistribution, independent of government provision of goods or services.

We asked subjects to imagine that their national government could provide five basic services, spending equal amounts on each: defense, education, health care, social security, and “everything else” (Baron & McCaffery 2004). We presented 16 cases in which government provided all possible combinations of the first four. In each case, we asked the subjects to choose the fairest level of progressiveness, including the possibility of negative taxes. Using actual government statistics, we divided taxpayers into three groups, each supplying a tyhird of the national income (hence there were far more taxpayers in the bottom third), and listed the median income for each group. The baseline, a flat-percent tax, had a tax level of 25% for each group. Each cut of a good or service lowered the baseline by 5%. Subjects could adjust progressivity up or down. Consistent with prior research on *disaggregation effects* (McCaffery and Baron 2003), we anticipated that subjects would not maintain the same level of redistribution — would not fully take into account or integrate the effects of the service cuts on household welfare — and hence choose less overall redistribution with fewer services.

Six subjects always chose the least progressive distribution, which was equal percentage rates for all three groups, and 2 subjects always chose the most progressive. The mean choice was 3.42, on a 1–6 scale with 6 being the most progressive. This amounts to a difference of 24.2% (in absolute percent terms) between the high and low income groups.

We calculated, for each subject, the mean effect of each cut on progressiveness, first ignoring the effect of cuts on out-of-pocket cost. The mean effects (in the change in percent difference between high and low groups) were, respectively, 1.1% for defense ($t_{77} = 1.70$, $p = 0.0931$), -0.1% for health care (n.s.), 0.4% for education (n.s.), and -0.4% for social security (n.s.), where a positive effect indicates less progressiveness with the cut than without it. The mean of these effects was not significantly positive, and the four services were not significantly different. Thus subjects basically maintained the same degree of progressiveness *without taking into account the effect of the cuts on out-of-pocket cost*.

But cuts do affect out-of-pocket costs, at least for three of the goods of

interest: health care, education, and social security, both in the experiment and probably in the real world. A more relevant analysis of the data therefore includes the effects of these cuts in public services on net — after public tax and spending — household welfare. Do subjects use the tax system to compensate for the effects of public spending cuts? If so, they would increase the progressiveness of taxes for these three goods. An attempt to make such compensation may account for the difference between the three goods and defense. But do subjects compensate enough?

The information we provided allows us to estimate the effects of cuts on out-of-pocket costs as a percent of income. The \$2,000 figure we gave for the effect of each cut is, respectively, 10%, 4%, and 1.5% of the three income levels (\$20,000, \$50,000, \$130,000). To achieve a redistribution between the high and low groups of 10% vs. 1.5% would require almost two steps on our graduation scale. Thus, to be conservative, we assumed one step for inferential statistics.

All three of the cost-yielding cuts (health care, education, social security) yielded corrections far less than the one step we assume would be required (minimum $t_{=77} = 12.45$, $p = .0000$). Hence, it seems clear that, while some subjects may attempt to offset the cost-increasing effects of cuts, on average the attempt falls far short of what is needed.

Table 5: Mean responses and inferred responses for presence and absence of health care, education, and social security, Experiment 3.










No cuts		
Top	33.6%	
Middle	22.5%	
Bottom	11.4%	
Three cuts, raw responses		
Top	18.9%	
Middle	7.5%	
Bottom	-3.9%	
Three cuts, responses plus out-of-pocket cost		
Top	23.4%	
Middle	19.5%	
Bottom	26.1%	

Table 5 shows the mean response of subjects, using the same type of graph they saw, in the absence of any cuts and in the presence of three cuts. The lowest panel represents the results of including out-of-pocket costs. Table 5 gives an excellent look at the isolation effect or disaggregation bias, playing out in a unified tax and spending system. Subjects preferred at least moderate progressivity in the baseline, global condition, with government provision of all five sets of goods and services. With three major private-cost items removed from the mix of public goods, subjects continued to choose a tax system reflecting moderate progressivity, even accepting a negative tax bracket for the poor, as the second panel shows. But when realistic private replacement costs were built back in, showing a global tax and out-of-pocket effect, the overall system now looks regressive, in the bottom panel. Compared to the subjects' own chosen baseline, the bottom-line reflects a steep cut in costs (taxes plus out-of-pocket) for the upper income level, a slight drop for the middle income level, and a dramatic (230%) *rise* in effective burdens on the lowest income level. By focusing on the "optics" of taxes alone, or disproportionately, a preference reversal in the bottom-line effects — what really matters — followed.

Note that aversion to progressivity cannot explain the results, given that subjects (on average) consistently chose progressive taxes. Nor can ignorance of the financial effects of public spending cuts explain the results. Subjects made many errors on the test question about the extra cost per household caused by cuts. But the most common error seemed to be to simply count the number of cuts, including defense cuts, which (by specification) should have had no effect on household spending. Yet 95% of the subjects gave the correct answer *or higher*. Moreover, the mean answer to the test question was 2.53 on a scale from 1 to 4, where the mean correct answer is 2.5. Subjects did not underestimate the effects of public spending cuts on net household costs. The results were essentially unchanged when we examined only the subjects who estimated cost correctly or overestimated it, on the average.

What *can* explain the results is the disaggregation bias or isolation effect. Subjects looked only (or primarily) at the tax system when adjusting it. They did not adequately factor in the effect of public spending cuts. The result is that effective progressivity decreased as the number of cuts increased — disappearing altogether with enough "downsizing" of government.

4 Toward a General Theory

We continue to work on additional experiments, to refine and expand our understanding of cognitive heuristics and biases in the understanding of tax, on the general grounds that knowledge is good. Ultimately, however, we are interested in advancing a realistic normative theory of taxation. It is here, eventually, that we hope our work has its greatest payoff. The literature on the analysis and critique of real-world tax systems tends to come from either a welfarist perspective (Mirrlees 1971, Atkinson 1996, Slemrod 1990), pointing out what is “optimal” in the sense of being welfare-maximizing, or a political economic perspective (Becker 1971, Doernberg & McChesney 1987), pointing out how the motivations of real-world legislative agents can diverge from the welfare-maximizing desires of their principals. We believe that any full-scale descriptive model of tax — necessary as prelude to effective prescriptive reform — must also account for the sometimes systematic misperceptions of the people, and how these interact with electoral outcomes, legislative behavior, and fiscal policies.

This is a grand project, and we are not far enough along to see much light at the end of the tunnel, or even to have more than a blind faith that such illumination will one day come. What follows are simply some preliminary thoughts towards this end.

4.1 Why it Matters

Why does it matter that subjects have inconsistent, biased understandings of real-world tax systems? We can think of several reasons, relating to the two basic features of any tax (public finance) systems: its size and its distribution. The general reasons can be illustrated with an example of a hidden tax, such as the corporate income tax (McCaffery, 1994b).

Most dramatically and problematically, cognitive psychology suggests that there can be a persistent wedge between utility and wealth maximization in public finance (compare Kahneman (2000)’s distinction between “experienced” and “decision” utility). Since for example citizens never feel that they are endowed with money that they do not have on account of any hidden tax — especially a “fully” hidden tax such as the corporate income tax (where no citizen perceives the value being taken away from her by virtue of the existence of the tax and general equilibrium effects (McCaffery 1994b)) — cognitive psychology suggests that people will under-react to its loss. Hidden

taxes will flourish. In general, the tax system will gravitate towards taxes that impose the minimal psychic pain, and expenditures that maximize psychic pleasure, regardless of the effects on actual wealth. But because money is a real good, capable of financing real improvements, there can be an opportunity lost for social betterment. If citizens can come to understand the true incidence of hidden taxes and react consistently thereto, they will insist on the same level of welfare economic improvement in the use of these funds as any other.

Hidden and other psychologically-favored taxes might be expected to reduce other, alternative sources of government revenue, holding the size of government — its total expenditure level — constant. If true, the bias towards hidden taxes would only affect the choice of tax. Our findings give reason to suggest that this, alone, could be problematic: hidden taxes can be more distorting, and less redistributive, than a fully enlightened citizenry might prefer, and the *disaggregation bias* suggests that citizens will not naturally support counter-vailing changes in the taxes within view to hold the desired level of redistribution constant. But there is also little reason to believe that hidden and other psychologically favored taxes will, indeed, simply reduce other taxes. Consider the cognitive psychological aspects of the so-called “flypaper” effect (Hines and Thaler 1995). Rather than new sources of revenue reducing existing sources, this effect predicts that new sources of revenue will “stick” to some extent, resulting in a larger government, *ceteris paribus* than would otherwise obtain. Hidden taxes will not supplant other taxes, in other words, but will go to the then-most salient use. Cognitive psychology predicts that programs once established and funded can be hard to cut, a standard application of the *endowment effect* or, equivalently, *loss aversion*.

Take social security, as one perhaps very large example of our suspicions. The cognitive advantages of the payroll tax suggested that it might grow, as it has indeed (McCaffery 1994b). As revenues came into the government, in a psychologically pleasing way, then office-holders had incentives to spend them, on salient benefits — as by increasing benefits payable under the social security system (see Shaviro 2001 for background). Soon enough, the benefits became entrenched, seeming to be entitlements (McCaffery 1999). Loss aversion made it hard to cut these elements of a newly constituted status quo. The United States now faces a looming crisis because social security benefits will soon outstrip payments. One solution might be to cut these benefits, at least to upper-income Americans who may need them less. But

the endowment and related effects suggest that this can be difficult.

In sum, politicians, who have incentives to make voters happy in the short to mid-term, will choose a mix of minimally painful taxes and maximally pleasurable expenditures, not necessarily welfare-maximizing ones. Our findings further suggest that politicians more skilled at framing public political issues such as tax will have more success in both getting elected and advancing their agendas than those not so skilled. The intuitive judgments that we have found will lead citizens to oppose new tax initiatives that may increase taxes but save money elsewhere. Pure tax aversion might have this effect. Also, the new taxes would be explicit, not hidden, the government having “maxed” out its sources of hidden taxes. Increased funding of health care from taxes might save more money elsewhere. And more use of taxes to fund research and development into new drugs could assure a more equitable distribution of the benefits of research, and also lower prices for drugs. Finally, invention and creation could be subsidized in various ways through taxes (as scientific research often is subsidized now), thus leading to lower costs through reduced use of monopoly pricing. But such reforms cannot occur unless people learn to think about taxes without the isolation effect that we have found. They need to see the big picture.

Moving from allocation to distribution, the other fundamental dimension of a tax system, we note that there is no clear, objective, universally accepted benchmark for the appropriate distribution or redistribution of wealth or income. But there is reason to believe, as we have found, that the degree of public support for distribution or redistribution is sensitive to the purely formal mechanisms of public finance — again contrary to the dictates of standard welfare economics. How much we redistribute resources or promote equality as a society should depend on matters more fundamental than whether we are asking if the glass is half full or half empty.

Consider another example. The government, on its expenditure side, serves two broad functions: to provide goods and services, and to redistribute wealth. Logic as well as the two welfare theorems of neoclassical economics suggest that these two functions, one allocative, the other distributive, are separate. To maximize social welfare, we should provide goods and services in the most efficient manner, which could well mean “privatizing” certain goods and services now provided in the public sector. Were we to do so, taxes could continue to redistribute wealth, including the gains from efficiency brought about by the privatization, in a paretian manner (compare the analogous argument of Kaplow and Shavell, 2002, in re the legal system generally). Yet

if subjects will not support redistribution standing alone — simply because the tax system needed to redistribute (i.e., the income tax) is too salient, or out of a psychological aversion to the negative tax brackets needed to effect redistribution — then the net amount of redistribution might indeed depend on the size and structure of the public sector. Efficiency and equity come into conflict.

4.2 What is to be Done?

We propose to continue our research agenda, and we hope that others join us. We have begun to explore the possibilities of various *debiasing* mechanisms, or techniques to lessen or eliminate the effects of the heuristics and biases we have found. Some of this is reflected in our analysis of hidden taxes and indirect effects set out above: subjects generally have a low degree of prior knowledge of both direct and indirect effects, and imparting this knowledge to them shapes their attitudes to some extent. But there is reason to be skeptical that debiasing techniques, alone, will fully succeed, given the depth of some of the mental habits, the complexity of tax, and the low payoffs for individuals for fully understanding tax. Worse, the fact that subjects seem to care about the stated intents behind policies, apart from their objective effects, means that rhetorically facile politicians can influence non-welfarist outcomes.

Absent effective public education and debiasing, researchers may begin to consider various institutional mechanisms for constraining legislators from exploiting widespread cognitive error. Here too, things will not be easy. There is room in the private sector, as we mentioned above, for arbitrage mechanisms to close the wedge between actual and normatively ideal decision-making and judgment. But far from serving as such a mechanism in the public sector, there is reason to believe that politicians can exacerbate the wedge, in the principal-agent problem familiar to the political economic tradition in tax. Even if some “political entrepreneur” (Popkin 1979) were motivated to reveal the true costs and incidence of a hidden tax such as the corporate income tax – a formidable task, as we have shown — there is no mechanism whereby she, personally, or even her political party could appropriate the benefits of the greater awareness; arbitrage mechanisms in the public sector are, as we have said, largely public goods.

Things might even be worse than the public good point suggests, for the very effort to shed light on taxes might hurt a politician. Suppose, that

is, that some politician was able to “unhide” the corporate income tax and argue for its replacement with a more efficient alternative so as to use the gains from the conversion to the “better” tax to finance education. Who is to say that the gains would not in fact be used to cut taxes, or on some other cause? It is not clear, in other words, that any one person or group can ever benefit, in a direct way, from revealing a hidden tax for what it is. Worse, the very revelation of the “truth” of the hidden tax might bring scorn on the politician — she might be seen as a tax increaser, not a truth teller at all. It is difficult to applaud the bearer of bad news.

This leads to a final, and our most optimistic, thought. One possibility for betterment is to interject competition into tax systems. A prominent example of a hidden and thus cognitively favored tax is the corporate income tax, or business taxes more generally. The appeal of such taxes, confirmed in our studies, naturally leads to the question of why such taxes are, relatively, low (the corporate income tax is a far distant third to personal income and payroll taxes as a percent of federal revenues, accounting for only some ten percent of the total). The answer seems to lie in competition between jurisdictions, which may serve much the same arbitrage role in public settings as in private ones. But such competition has its limits, and there is ample evidence that the United States and other major nations are attempting to suppress its effects. Normative welfare economics needs to look into the institutions of public finance with the lessons of behavioral economics in mind.

All this suggests that there is much work to be done: in continuing to understand heuristics and biases in the understanding of tax systems; in analyzing how these biases interact with electoral processes; in considering the efficacy of various possible debiasing techniques on the individual level and, finally, in analyzing the possibilities of implementing institutional reforms — such as “cost benefit” statements in other regulatory domains; budgeting, offset and scoring rules in tax; competition and lowered barriers to competition in public finance — that might shed more light on this murky area of our collective lives. If the tasks seem formidable, we believe that the gains to be made for social welfare warrant the continued attempt to undertake them.

5 References

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