

THINKING ABOUT TAX

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This article reports the findings of several experiments about perceptions of various aspects of tax-law design. The authors find that people are vulnerable to a wide range of heuristics and biases in evaluating public finance systems, leading to inconsistent judgments and evaluations. These errors in judgment are specific instances of a more general *isolation effect*, whereby people respond quickly to a decision or choice set, focusing on salient aspects while ignoring or underusing logically relevant information that is not immediately before them. In tax and public finance, this tendency to make decisions as if with blinders on is problematic. As a result of it, skillful politicians can manipulate public opinion, and 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.

Keywords: tax, heuristics and biases, framing, isolation effects, public finance

Tax matters. We therefore believe that how citizens think about tax in a democracy matters (Steinmo, 1993). Although ordinary people do not vote directly on complex matters of tax and public finance, popular opinion helps to shape and constrain what politicians do. In this study we examine how people think about tax and related issues. We find that they suffer from a wide range of heuristics and biases, or cognitive errors, in their thinking. Mental mistakes lead to inconsistent judgment and evaluation. In turn, this inconsistency means that actual tax and spending systems can be volatile, subject to the changing perceptions of citizens, manipulable by politicians, and suboptimal. The end result is tax and public finance systems that are psychologically pleasing but economically costly.

The central portion of this article reports and analyzes the results of a series of experiments testing for the consistency of subjects' perceptions of issues relevant to tax and public finance. The various biases we explore are related to those studied in private market domains, such as in the evaluation of risky choice

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(Kahneman & Tversky, 1984; Tversky & Kahneman, 1986) or in regard to the understanding of consumer finances (Thaler, 1980, 1985). Although there are many seemingly discrete cognitive biases, as we discuss below, they all can be seen collectively as instances of a more general *isolation* or *focusing effect*. People decide complex matters—and tax raises a host of complex matters—by responding to the most salient or obvious aspect of a choice set or decision problem. They fail to take into account logically relevant information that is not immediately available to their mental models. In tax, this means, for example, that people (a) generally fail to integrate parallel tax systems or tax and spending systems to form globally consistent judgments about bottom-line allocations and distributions; (b) react to the labels or metrics of public finance discourse; and (c) prefer hidden taxes, however distorting to their own preferred allocation or distribution of resources, over more transparent levies. Equity and efficiency can both suffer as a result of these and other biases.

Although we follow others in calling this cluster of mental biases *isolation effects* (Camerer, 2000; Kahneman & Lovallo, 1993; McCaffery & Baron, 2003; Read et al., 1999), others have called them *focusing effects* (Idson et al., 2004; Jones et al., 1998; Legrenzi et al., 1993). The idea of a focusing effect came from the theory of mental models in reasoning, as explained by Legrenzi et al. (1993): People reason from mental models and, when possible, use a single simple model that represents just the information they are given. Other factors are ignored or underused. Once again, the effect is the same: a kind of tunnel vision in approaching problems and choices.

We find that ordinary people make routine and predictable, yet often dramatic, mistakes in thinking about tax—mistakes that we can measure on the subject's own lights, as evidenced by her or his inconsistency. That is, it is not generally a matter of subjects being “wrong” by some objective benchmark but instead contradicting their own expressed preferences. On the one hand, this is not too surprising. Common sense as well as sophisticated social science confirm that we all make routine errors in judgment and decision making. Thus, it is understandable that we find errors prevalent in thinking about tax and public finance, areas of considerable complexity.

On the other hand, however, there is reason to believe that errors in ordinary judgment might be more problematic, from a public policy perspective, in matters of tax and public finance than they are in private finance. This raises the second aim of our article: to discuss why mental errors in thinking about tax matter and how they can be ameliorated or cured. In private markets, the consequences of individual heuristics and biases are often 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 while producing, on net, efficient outcomes. In the public sector, however, 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.

As a result of the confluence of cognitive error on the one hand and the absence of any general arbitrage or corrective mechanism on the other, public finance can be suboptimal. The resolution of public finance matters can be fragile, for example, because of the potential for framing manipulations that can lead

citizens to reverse their preferences, that is, apparently to change their minds. 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—a bottom-line effect 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 higher real burdens in terms of transactions costs and deadweight losses. In such cases, wealth is left on the table, a homage to our illusions.

Our two goals are, first, to set out the facts of how ordinary people think about tax, on the basis of our experiments over the years and, second, to discuss why these misperceptions of tax are significant and how they might be corrected. Before we present the experimental findings, we set forth some further background on the disciplines and subject matters in play.

Cognitive Psychology

Contemporary economics is based on a rather simple set of axioms about people’s rationality. Perhaps the most basic tenet of the standard theory is consistency: People should not change their preferences on the basis of irrelevant matters such as the purely formal labeling of a state of affairs (Kahneman & Tversky, 1984). But they do. The field of cognitive psychology, with important roots in the “bounded rationality” work of Herbert Simon (1955), has shown that individuals deviate, often systematically, from ideal precepts of rationality, including consistency. Daniel Kahneman and Amos Tversky played significant roles in expanding the field and its insights (Kahneman & Tversky, 1979, 1984; Tversky & Kahneman, 1974), which achieved a more mature status with the awarding of the Nobel Prize in economics to Kahneman in 2002. General reviews of the topic are provided by Baron (2000), Gilovich et al. (2002), and Kahneman and Tversky (2000). Applications to law are discussed in Sunstein (2000); applications to public finance are discussed in McCaffery and Slemrod (2006).

Cognitive psychology rests on observations of actual human judgment and decision making. Various types of deviations from ideal rationality have been chronicled. Consider a few examples:

1. *Framing* refers to the effect whereby the same question or choice set, described differently, can lead to different answers (Levin et al., 1998; Tversky & Kahneman, 1981, 1986). A simple example is asking whether people want their glass “half full” or “half empty.” In our experiments we asked about both child bonuses and childless penalties, which are simply different ways of describing the same facts.

2. The *endowment effect*, sometimes called a *status quo bias* or *reference-dependent utility*, refers to the fact that people weigh losses from the status quo more heavily than otherwise-equivalent gains, even after wealth effects are controlled. Thus, evaluations and choices vary with the specification of the status quo or reference point (Bateman et al., 1997; Kahneman et al., 1991). A common example is that the amount people would be willing to pay to acquire a mug is smaller than the amount they would need to be paid to sell the very same mug if they perceive that they “own it.” In our experiments below, we find that subjects

prefer “fully hidden” taxes (McCaffery, 1994a) in part because they never perceive that they had the wealth that is being taxed in the first place, so they do not code the tax as a loss.

3. *Overgeneralized heuristics* include extensions of principles that serve good purposes most of the time to inappropriate situations. For example, subjects judge harmful omissions less harshly than harmful acts (e.g., Spranca et al., 1991). In a general way, the isolation effect is an instance of this heuristic: Subjects habitually focus in on a choice or problem, ignoring tangential information, which is usually irrelevant, even in situations where the outside data are, in fact, relevant.

4. *Judgment biases* are a class of general distortions of numerical judgment, a prime example being underadjustment after anchoring on a salient value (Chapman & Johnson, 1994; Tversky & Kahneman, 1974). In a simple example in our experiments, subjects are likely to react to a posited tax structure, in terms of levels and degrees of progressivity, in choosing their own preferred level and distribution, even where they are fully free to ignore this random, hypothetical starting point and choose their ideal.

A more comprehensive list of cognitive deviations has been provided by Baron (2000).

Some scholars are skeptical about the facts or relevance of these heuristics and biases. Challenges arise on two fronts. The first involves the absence of any general foundational theory of how people decide. Cognitive psychology is a “skeleton of empirical facts around which a theory is draped,” according to one leading practitioner of the field (Camerer, 1990, p. 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, 1994b; 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 neurocognition or evolutionary, adaptive psychology might one day provide.

We believe, however, that 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, 1994a). In this article, we organize our analysis around what we and others term an *isolation effect* (Camerer, 2000; Read et al., 1999; McCaffery & Baron, 2003). The effect is similar to, and sometimes perhaps identical with, what others term a *focusing effect* (Idson et al., 2004; Jones et al., 1998; Legrenzi et al., 1993). In both cases, subjects focus on one especially salient aspect of a choice or evaluation problem and ignore or fail to integrate other less salient items. They make decisions in isolation, as if with blinders on, of logically relevant data. 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 ignoring irrelevant information, applied in a setting where the ignored information is relevant), a normative sense of constraint or “moral heuristic” (Sunstein, 2005) (such as deciding only what you are being asked to decide), or other factors (McCaffery & Baron, 2003). However grounded, in a wide range of cases, the isolation effect leads to inconsistent judgment and decision making. The isolation effect may not be a deep explanation

of the biases—we cannot (yet) take a single pill to cure it—but it does help to organize the various mental errors we observe and generates roadmaps for their practical amelioration or cures.

The second ground for skepticism involves translating the objective, descriptive matters into a prescriptive set of policy recommendations. Many scholars feel that behavioral biases are too ad hoc or that the world has evolved its own correctives, such that no practical policy prescriptions follow from simply noting the errors. We disagree. We believe both that cognitive error is pervasive in how many people think about tax, understandably so, and that there are important avenues to be explored in addressing the effects of the errors. We address these matters at the Conclusion of the article.

Tax

Our experiments have concerned taxes broadly conceived, generally with the American tax system in mind. Taxes today are large in size and significant in social impacts. In the United States, taxes account for approximately one third of the gross domestic product, a figure actually low by the standards of other developed countries, and taxes affect a wide range of issues, including patterns of work, savings, household formation, education, home ownership, and charitable giving.

At the highest level of generality, taxes have two dimensions: their magnitude or level (or the total burden) and their distribution (or how the burden is spread out across the population). Distribution, in turn, is a function of the tax's base (or what is being taxed) and its rate structure (or at what rate the tax applies to the base).

The United States today (as with 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, which was the focus of many of our experiments. A close second in magnitude is the social security or payroll tax system. In our studies of disaggregation bias, described below, we asked subjects to consider both income and payroll taxes at the same time. A distant third in size is the corporate income tax (U.S. Census Bureau, 2003, Table 481); in our analysis of hidden taxes, we explore the attraction of these entity-paid taxes. 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, Table 442).

Our experiments asked about the appropriate level as well as the appropriate distribution of taxes, specifically the appropriate degree of progression in the tax system. We asked such questions in the context of family structure (whether a couple is married, whether they have children); broad tax-law design (whether there is one tax system or two and what the properties of the current systems are); and the funding of public, or potentially public, goods. We investigated attitudes toward more specific features of tax-law design, such as the accommodation (or not) of children and marriage. We also explored the various reasons behind taxes—the provision of public goods, redistribution in and of itself—as well as attitudes toward government revenue-raisers, whether they are commonly conceptualized as taxes.

Psychology, Public Policy, and (Tax) Law

To tie together these various disciplines, each a part of the domain of this journal, we ask, How does cognitive psychology relate to tax law, and what are the public policy implications of that intersection? We start with the idea that public opinion matters in a democracy, especially in an area of such importance to citizens and households as their taxes and government benefits. Stated simply, public opinion exerts a constraint on what governments can do (Steinmo, 1993). Of course, elected officials interact with the public in more complex, multidirectional ways as well: Even as politicians respond to public opinion, they play a role in shaping it. We aim to begin a deeper analysis by first exploring how ordinary people think about tax and public finance.

One could leave it at simple first principles. From the premise that public opinion matters, and that people are generally rational, one could either develop models of individual self-interest that simply predict public attitudes about tax or look to polling data that simply tell us what public opinion is. Models based on simple rational self-interest, however, are limited and problematic, as they do not tell us how citizens really think, if “real” thinking is not always rational and self-interested, as we have learned in the private finance context. Polls, on the other hand, are based on broad, general questions of pressing public policy interest. They do not show us how citizen thinking might have played a role in getting to particular proposals in the first place or, for that matter, how different framings of the public debate might affect the very public opinion being studied. Hence, we turn to cognitive psychology to improve our understanding of how ordinary people might think about tax.

As we anticipated above, and explore more fully below, we believe that the effects of cognitive error in how people think about tax and public finance are widespread. These effects are unlikely to be ameliorated by existing systems, as the market itself or the forces of competition may, arguably, ameliorate the effects of cognitive error in the private finance context (Barberis & Thaler, 2003). Consider as a thought experiment—as we do extensively below—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 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 & Weiss, 1994), an effect that can lead to a larger government, *ceteris paribus* (see Hines & Thaler, 1995, on the so-called “flypaper effect,” whereby government grows with new revenue sources; see also McCaffery, 1994a). 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 educate people about tax; and the lack of incentives for lawmakers to implement any debiasing or arbitrage mechanism can all be

expected to, if anything, make the usual heuristics and biases more acute in the field of tax. More specifically, we expected to see many instances of isolation effects. Matters of tax and public finance affect a wide range of variables. Yet we expected ordinary subjects to focus in on salient aspects of the choice or decision set before them and not to bring in, adequately or at all, information that was located “off stage,” as it were.

Method

We followed a similar procedure in all of the original experiments reported below. About 50–200 subjects, depending on the study, completed a questionnaire on the Web for which they 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 to receive payment. Subjects identified themselves only with their e-mail address after they registered, and the e-mail 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 generally tested whether the very same people, asked the same question in different ways, reacted differently. In our cases, the null hypothesis states that subjects should be consistent: If they like their glasses half-full, they should also like them half-empty. We found repeatedly, with strong statistical significance, that subjects are not, however, so consistent. Problems such as selection bias, common to across- or between-subjects analysis, standard in public opinion research—in which the researcher is typically trying to compare a particular sample with a wider population, such as all U.S. citizens—are not of much concern to us. Our interest is in identifying inconsistencies and examining their nature. In most cases, we found inconsistencies heavily tilted in one direction and consistent with the predictions of prior theory: Subjects preferred policies described as “bonuses” to the self-same policies described as “penalties,” hidden taxes to transparent taxes, and rules whose neutralities were manifest to the same rules whose nonneutralities were transparent. In such cases, we can assert with some confidence that these biases are likely to be widespread in the population—all the more so because they predict features actually evident in the U.S. tax system, giving real-world validity to our experimentation. In other cases, we found inconsistencies in both directions. For these instances, we are unable to say with certainty which direction will prevail 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., in press) but not in terms of sex, because, for unknown reasons, women predominate in our and others’ Web-based respondent pools.

In terms of precise methods, the studies were programmed in JavaScript so that one case was presented on each page or screen, and subjects were required to answer a few questions before proceeding to the next screen. After a brief introductory description and explanatory page, in which we gave pertinent background, subjects saw between 24 and 32 individual screens asking for their responses in each experiment. 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 ensure that subjects understand the questions and answer in the appropriate range. We found that an overwhelming percentage of our respondents acted reasonably within objective parameters.

Psychology Results

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

Metric Effect

We begin with a rather simple, and seemingly minor, application of our general theme. Tax rates can be flat (same for all), regressive (rates decline with income or other measure of taxability), or progressive (rates increase with income or other measure of taxability). Throughout our experiments, we found interesting interactions between subjects' perception of, or desire for, progressivity—a norm of expecting the more affluent to pay more in absolute and/or percentage terms—and other effects. Perhaps these patterns of responses relate to some basic inconsistencies over what *progressivity* even means. Most strikingly, subjects gave systematically different answers on the basis of whether the question was asked using dollars or percentages, in what we call a *metric effect* (McCaffery & Baron, 2003): The answer is affected by the metric, or the terms in which the question is asked. The effect is analogous to the finding that subjects, even experienced clinical psychology professionals, make different decisions when considering risk data in probability or frequency metrics (Kahneman & Tversky, 1982; Slovic et al., 2000). In our case, subjects consistently wanted more progressivity when matters were framed in percentage rather than in dollar terms. A likely reason is not hard to surmise: There is a sort of progressivity illusion under dollars because those with a high income pay more dollars even under a flat percentage rate tax. At a constant 20% rate, for example, a \$100,000 household pays \$20,000 in taxes, whereas a \$20,000 household pays \$4,000. The tax appears progressive when stated in dollar terms but not in percentage terms. These metric effects are examples of isolation and/or focusing effects because the subjects are focusing on the optics of the formal presentation and are not relating their decisions back into a common, consistent, comparable metric. A flat tax looks progressive in dollar terms, and subjects respond to this look alone.

The first two tables come from an experiment in which we asked subjects about their attitudes toward both the level of taxation, as in Table 1, and the slope of its distribution, as in Table 2 (McCaffery & Baron, 2004a). 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. For each type of taxpayer, we had conditions with and without children, for a total of eight types of households. The experiment was concerned primarily with how subjects

Table 1
Mean Responses (in Percentages) to Questions About Fair Taxes

Response	Single	Equal 1	Equal 2	One earner
No child				
Dollars	14.7	14.0	13.8	13.4
%	17.5	17.6	17.3	16.5
Child				
Dollars	12.4	13.3	12.5	11.9
%	15.1	17.4	15.2	14.7

Note. Equal 1 = married equal-earner couples with incomes presented on a per-person basis; Equal 2 = married equal-earner couples with incomes presented per couple; one earner = married one-earner couples.

Table 2
Mean Fair Taxes (in Percentages) as a Function of Income

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

accommodated for marriage and children, but it also provided a good sense of 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, at other times percentages. Table 1 gives the mean responses across all income categories for the various household types and thus presents the level of taxes, the first of the two general dimensions of tax. When the subjects gave answers in dollars, we converted them into percentages for purposes of the table, so that the metric effect is eliminated from the presentation of the results, and readers can see the inconsistencies in subjects' responses more clearly. Note that the levels are consistently and significantly higher when subjects gave their answers in percentages, for all eight categories (four types of households, with and without children).

Table 2 shows the slope of desired progression, which is the second general dimension of a tax system—its distribution. Here, we averaged across all eight types of households for each income level: \$25,000; \$50,000; \$100,000; and \$200,000. Once again, when subjects answered in dollars, we converted their answers into percentages, for the purposes of the table. Table 2 shows that the slope, or the degree of progressivity—the extent to which the high income earners pay more, in percentage terms, than those with a low income—is higher when the question is asked in percentage. Indeed, the range—the desired rate on the highest income class minus the desired rate on the lowest—is more than twice as high, 15.4 compared to 7.5, when subjects are thinking in percentages. There is a progressivity illusion 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 percentages as opposed to dollar terms. This finding suggests that the optics of progressive marginal rates introduce instability into popular perceptions of tax systems. Candidates who favor progressive taxes ought to talk in percentage terms; those who favor flatter taxes, in dollar terms; and so on.

Penalty Aversion and the Schelling Effect

The metric effect might lead to instability in tax systems or to an undue premium on rhetoric as opposed to reality in political portrayals of public finance, as we discuss later. Slovic et al. (2000) found what we suspect, namely that professionals who aim for a particular public impression choose a metric best suited for eliciting such an impression. There are, however, more troubling applications of cognitive psychology to redistribution.

People do not like penalties, but they do like bonuses. Loss aversion predicts that the opposition to penalties is more intense than the preference for bonuses

(Thaler, 1980). In standard economics, however, penalties and bonuses are simply two sides of the same coin: A bonus is the absence of a penalty, a penalty the absence of a bonus. 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. Once again, this is an instance of a focusing or isolation effect: The penalty frame seems to elicit a moral heuristic, such as “do no harm” (Baron, 1996), not triggered by the bonus frame. Subjects do not attempt to make consistent judgments by considering the equivalence of the two conditions.

We also hypothesized, following a classroom demonstration from Thomas Schelling (1981), that this penalty aversion would be exacerbated by progressive rates. As we have already seen with the metric effect, progressivity creates optical distortions. 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. Schelling next pointed out, however, 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 results. 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 for the rich, in what we dub the *Schelling effect*: an interaction of penalty aversion and a certain progressivity illusion.

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) (McCaffery & Baron, 2004a). We presented items in the following way:

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 for households earning \$25,000 and \$100,000, respectively, and the bonuses for being married were \$2,000 and \$6,000, respectively. Note that in both sets, the underlying facts were identical: Married couples paid \$3,000 and \$30,000; single couples paid \$5,000 and \$36,000, depending on income level.

We asked the subjects both about the fairness of the bonus or penalty and also about its allocation or magnitude. The results confirmed our hypotheses. In every case, far more subjects showed the predicted pattern than the reverse. That is, first, they judged bonuses as fairer than penalties, even though they were identical but simply were 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 earners and too low for low income earners, but they judged the surcharge (penalty) as too low for those with a high income and too high for those with a low income. We thus confirmed the existence of both penalty aversion and the Schelling effect in tax.

Neutrality Bias

Penalty aversion seems like an application of a moral heuristic—“do no harm”—that can be made more or less salient depending on the presentation of a choice or decision set. When we ask about child bonuses, subjects do not think that anyone is being penalized; when we ask about childless penalties, the “do no harm” or “penalize no one” principles come to the forefront. A common norm in tax policy is “horizontal equity”—the idea that like taxpayers should be treated alike (Kaplow, 1989; Kaplow & Shavell, 2004), akin to the common moral heuristic to “treat likes alike.” The trouble is, in tax and elsewhere, that the application of this norm depends critically on whom or what is being compared. Often in tax, a policy that is neutral relative to two sets of taxpayers (say A and B) is nonneutral vis-à-vis some other third set (C). We suspected that ordinary subjects would favor a policy more when its neutrality was emphasized—when A and B were being compared, rather than when it was not, such as when A or B was being compared with C. We term this reaction a *neutrality bias*. Once again, isolation effects are in action. When a third member of a potential set, C, is put out of sight, and hence out of mind, responses change.

An obvious subject matter with which to test this hypothesis is the taxation of households. It is now well established that a tax system cannot concurrently support progressive marginal rates, couples neutrality, and marriage neutrality. (McCaffery, 1997; Berliant & Rothstein, 2003). Marriage neutrality means the tax system is neutral toward the act of getting married: 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 favor marriage neutrality (opposing bonuses and penalties), couples neutrality, and marginal rate graduation, all at the same time.

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, the first with two \$10,000 earners, the second 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 for 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. In either case, or anything in between, the law violates marriage neutrality. On the other hand, if married couples are allowed to pay taxes under the single person’s rate structure—making for marriage neutrality—the two couples pay a different tax: The two-earner couples pay \$0, and the one-earner couples pay \$2,000—a violation of couples neutrality. Yet despite the impossibility of having all three qualities (progressiveness, couples neutrality, and marriage neutrality), most people favor all three.

We asked about different options for addressing marriage within a system of progressive rates (McCaffery & Baron, 2004a). Our experimental design featured four households: married and unmarried, one-earner couples, and two-earner couples, each with a total income of \$40,000. We had four possible (and realistic) ways to accommodate marriage: separate filing, in which people pay taxes as

individuals whether married or not, and 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-earner couples pay higher taxes). Each of the other options preserves couples neutrality but violates marriage neutrality in a different way: 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 between these different options. We had two focuses, based solely on our tabular presentation of 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 nonneutralities, 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 nonneutrality and, hence, make separate filing look less attractive. In each case, results went in the direction predicted; that is, subjects preferred separate filing more in the marriage focus than in the earners focus. 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.

Tax Aversion

Penalty aversion, considered above, is related to classic biases such as loss aversion; penalties seem like losses measured or evaluated from a status quo baseline. Bonuses seem like gains from a *different* status quo baseline. Thus, in the example of penalty aversion previously discussed, moving from taxes of \$5,000 or \$36,000 to those of \$3,000 or \$30,000 looks like a bonus; moving from taxes of \$3,000 or \$30,000 to those of \$5,000 or \$36,000 looks like a penalty. In tax aversion, we have the very same movement, described as a “tax” or not: Reference points do not change, only labels do.

We suspected that people are indeed 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* changes neither the starting point nor the end 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. 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 prefer to pay for these services through taxes rather than through fees. Our principal hypothesis was that such labels would matter, in a dramatic example of a focusing effect—subjects react to the salient label, ignoring the de facto economic equivalence.

We conducted an experiment to assess the effect of simply calling something a “tax” (McCaffery & Baron, 2004b). 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 end financial states—where the users of the service paid its provider directly without the government’s acting as an intermediary. We used 15 services that we thought might differ in various factors: the status quo, whether subjects thought that the services are provided more efficiently by government or others, the subject’s perceived self-interest, the extent to which subjects thought that the rich should pay more for the service, whether subjects thought that people differ greatly in their use of the service, and the extent to which subjects thought that the goods or services involved public goods (such as vaccinations, which can prevent the spread of diseases to others).

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, where the economics were identical. In this particular experiment, which combined tax and spending programs, we found no overall preference for or against taxes. Particular goods or services, however, differed in whether subjects favored taxes to pay for them. Those significantly favorable for tax were fire, education, and social security. Least favorable were phone services and theft insurance. Regressing across factors that we asked subjects about, we found that the status quo—how the goods or services were paid for in the subjects’ local jurisdiction—was highly significant. Thus, subjects seem to accept taxes as compared with user fees for items already being paid for by taxes and to prefer user fees to taxes where there were presently no taxes in place. Hence tax aversion might better be understood as a “no new taxes” bias, as we have heard it said.¹

In other experiments reported below, we found that subjects had an aversion to the income tax, even when they favored redistribution in general. We also found, consistent with much polling data,² that given a general, abstract choice, subjects preferred to cut both taxes and spending to fairly low levels. When confronted with particular spending programs, however, they are unable to make aggregate cuts. A recent experiment by Eckel et al. (2005) has shown there are different reactions to an exaction labeled as a *tax* and an unlabeled exaction. Specifically, when subjects were told that they had been taxed, with the proceeds

¹“No new taxes” was the famous pledge of the elder George Bush, 41st president of the United States; his alleged violation of the pledge is said to have cost him reelection. We have also been informed by experts who advise on global tax reform that citizens often vehemently oppose user fees for services that they perceive as “free,” that is, paid through general taxes. Thanks to Richard Bird for discussions on this point.

²See, for example, the various related polls (showing an aversion to taxes, a preference for balanced budget, and a preference for increased spending) at <http://www.pollingreport.com/budget.htm>

helping a charity, the researchers found a crowding out effect: Subjects reduced their voluntary contributions to offset the tax. When the same values were simply taken from subjects in an unlabeled manner, and sent to charity, crowding out did not obtain. In sum, labels matter, and *tax* tends to be a negative one.

Hidden Tax Bias

If people are tax averse, as least to any new or general levies, governments have an incentive to hide taxes in various ways. One is to call them something else: user fees, surcharges, and so on, as just discussed. Another is to make taxes indirect or hidden—nominally paid by some third party. We hypothesized that people would prefer such hidden taxes, in part because they would not think through to the next step, in which they bore the true incidence of the tax; rather, they would consider the tax in isolation of its ultimate effects. 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 respond to a tax. But people do not seem to think this far or this many steps ahead.

As a matter of fact, taxes can be partially or fully hidden (McCaffery, 1994a). In the former case, the incidence of the tax is known, or easily knowable, but hidden from the payor's direct view: The employer's share of social security contributions works this way, as do imbedded taxes on cigarettes, alcohol, gasoline, and most value-added taxes. In the latter case (a fully hidden tax), 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 et al., 1991) predict that subjects will prefer such hidden taxes to direct levies, as they will not feel as if they are losing wealth because they never felt they were entitled to it in the first place. We go beyond these explanations to consider isolation effects as well.

We carried out several experiments to test some of these hypotheses (McCaffery & Baron, in press). 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 principal experiment we report also involved an attempt at prompting subjects to think about what is hidden, a theme to which we return in the Conclusion. In a way, the prompt is a minor attempt to debias the subjects to improve their thinking.

We examined two dimensions of government action: taxing and spending. We looked at raising money (Raise) and paying money (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 with raising it by a payroll or a business tax. We hypothesized that both because of tax aversion and its greater salience (lesser hiddenness), people would tend to oppose an income tax until they thought about its redistributive effects from rich to poor, as our prompting led them to do. 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—again, as our prompting suggested.

We compared paying for the good through tax deductions with paying through tax credits or direct payment. Given a progressive income tax structure, paying through tax deductions is, *ceteris paribus*, regressive; those with higher income derive more benefit from the mechanism. We hypothesized that people would favor deductions until they thought about their redistributive effects, helping the rich more than the other two methods.

Subjects were sorted into two groups. Each group received six screens about each of the four types of insurance, with the Raise questions in the odd positions (1, 3, 5) and the Pay ones in the even ones (2, 4, 6). All subjects saw the same baseline condition on Positions 1 and 2, followed by two prompting conditions. The order of the prompting was counterbalanced: Group 1 received a prompting screen in Positions 3 (for Raise) and 6 (for Pay); Group 2 received it in Positions 5 (for Raise) and 4 (for Pay). The prompting asked questions about the incentive and distributive effects of the options and explained the distributive consequences of using deductions. The intent was to encourage subjects to consider that income taxes are progressive, whereas payroll and business ones are not, and paying through the income tax is regressive, whereas direct payments or tax credits are not.

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 because they are favorable toward redistribution to the lower income classes—a point of view that most subjects adopted. Once again, a progressive marginal rate income tax is redistributive when it is being used to raise revenues but not when it is being used to subsidize private spending.

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 prompting came in the ordering, as shown. In general, attitudes were more favorable in the prompting conditions than in the most comparable control conditions.

What is striking is 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. Contrary to our initial hypothesis, subjects preferred direct payments or credits to using the income tax system to pay for services, even before the prompting condition, although they were happy enough to abandon, almost altogether, the income tax as a spending system after that prompting. Indeed, Figure 1 shows that subjects were 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 did not like the income tax as a vehicle to raise or to spend money. An aversion to the income tax, *per se*, seems to trump a desire for redistribution.

Disaggregation Bias

Our next two results concern the splitting of fiscal policies into parts, where the isolation effect is in full view. These effects work with the hidden tax bias just discussed because they suggest that subjects will not generally counteract the

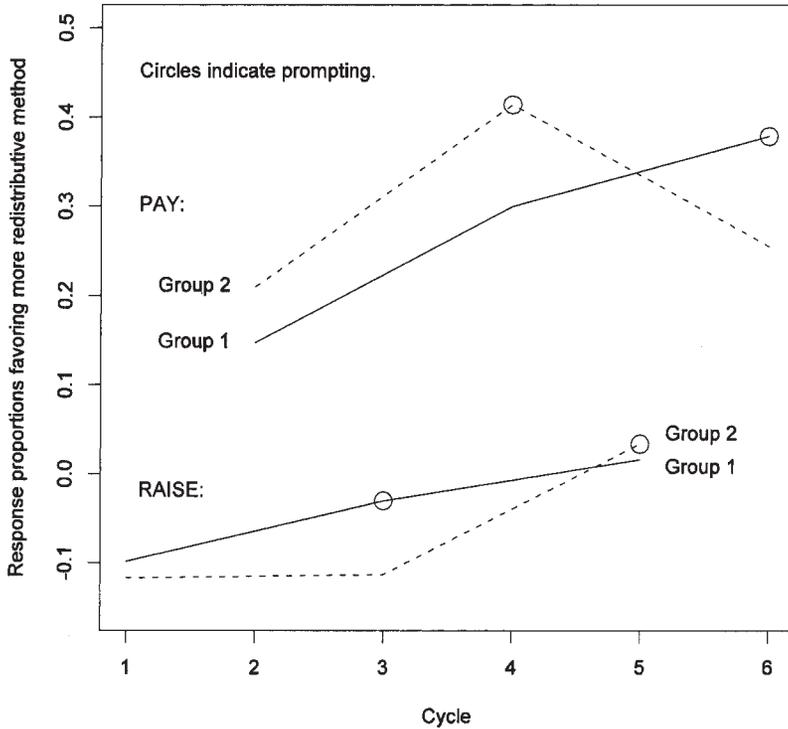


Figure 1. Favorable attitudes toward more progressive methods as a function of prompting (circles), raise (bottom lines) versus pay (top lines), and the order of the conditions (Group 1, solid; Group 2, dashed).

effects of relatively regressive tax and spending systems in the remaining, salient income tax system. We begin with the tax system as a whole, composed of multiple parts.

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% as much revenue as personal income taxes. The fact 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. If people were fully rational, however, it should not matter that any particular tax in a multitax system is regressive. Any level of progressiveness 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, he or she can effect the same global distribution of tax burdens as if he or 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 our basic experiment on this point (McCaffery & Baron, 2003), we simply asked subjects 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, and other times we listed 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 in income, including one zero tax option. In half the cases, we asked subjects to set a total distribution; in 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 percentages. This generated 32 screens: 2 (taxes given) \times 4 (levels and rates) \times 2 (other, total) \times 2 (dollars, percentage). There was no rational reason why the bottom-line responses—the overall tax system, put together—should vary at all, but it did.

Table 3 lists the mean tax rates, across income levels, converted into percentage and total (where we were asking in dollars and/or about the other tax alone), so that the presentation in the table is in a common metric.

Table 3 reveals that both frames (other vs. total and dollars vs. percentage) and the starting points affected outcome. 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 ($t(45) = 7.42, p < .0001$), with the interesting exception of the case in which the given tax was set at 0: What we call the *aggregation frame* changed choices. (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 percentages than in dollars ($t(45) = 4.22, p = .0001$): What we call the *metric frame* once again played a role.

Subjects were also insufficiently responsive to changes in the given rates—the starting points affected the end points, although subjects could choose whatever end point they wanted. Subjects anchored on whatever rates they were given and

Table 3
Total Taxes in Percentages

Given rates on					Response				<i>M</i>
					Dollars		%		
\$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
					15.28	19.09	17.35	21.87	

Note. Response means are shown in bold.

did not adjust sufficiently 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, $t(45) = 6.65, p < .0001$, and t was almost as high when the 10 nonresponders were removed).

Table 4 shows *graduation*, the other broad component of a tax system, which we define as the slope of the percentage tax as a function of income step, with each income step (i.e., each doubling of income) set as one unit. Graduation is logically independent of the level of taxation, shown in Table 3.

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 percentage than for dollars ($t(45) = 5.78, p < .0001$), 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 had an effect. 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 ($t(45) = 5.77, p < .0001$).

This experiment revealed several biases. 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 percentage columns than in the dollar ones. The disaggregation bias is evident in the fact that the Other columns in Table 3, for both dollars and percentage, are higher than the Total columns. Also, an anchoring and underadjustment process is evident in the significant variation across the rows and in their correlation with

Table 4
Graduation (Tax Change for Each Step) as a Function of Aggregation Frame

Given rates on					Response				<i>M</i>
					Dollars		%		
\$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
					4.00	5.39	5.91	7.30	

Note. Response means are shown in bold.

the left-hand, “offstage” tax. The disaggregation bias suggests, contrary to logic, that ordinary people will have a difficult time accepting a steeply progressive tax system, even if it is simply to compensate for other relatively regressive elements of public finance that are, as it were, offstage. 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, (a) subjects seem willing to consider higher total tax burdens if there are more smaller taxes, (b) 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 (c) 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.

Privatization Effect

Just as tax systems can be combined or torn asunder, so too can the two broad functions of public finance, that is, government’s allocative and redistributive functions. In choosing whether to intervene in the economy, and to what extent, the government can relentlessly pursue an efficiency or wealth-maximizing agenda. Then the government can use the tax system to achieve whatever level of end-state distribution it considers fair or just. Specifically, decisions such as whether to have public provision of goods or services should be decided on the basis of efficiency alone, to make the social “pie” as big as possible. In the limiting case, the government would do nothing affecting allocative matters, because private markets would be efficient. But then the government could still redistribute through the tax system, which would serve a pure, zero sum, redistributive function. Not only are the two functions logically separate but, also, by thinking about them differently, the government can maximize social welfare while a Paretian constraint is met. The question then becomes, Do people think in a way consistent with this approach? We conducted a series of experiments to examine this.

When governments raise taxes through a progressive tax scheme and then pay for goods or services that cost the same for rich and poor alike, the net effect is both to provide the goods or services and to redistribute income—a “cross-subsidy” through the provision of the goods or services. The rich pay more, the poor pay less, with both income classes benefiting the same. This is a paradigm example of the bundling together of two distinct governmental actions, allocative (providing the goods or services in the first place) and redistributive. Were government simply to privatize or otherwise cut government goods or services, without continuing the redistribution effected through the tax and spend program, a greater burden would fall on those who are relatively poor. Logically, however, the government could continue to redistribute resources through the tax system without the provision of the goods or services. 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 goods and services, spending equal amounts on each: defense, education, health care, social security, and “everything else” (Baron & McCaffery, 2006). We presented 16 cases in which government provided all possible com-

binations of the first four goods and services. In each case, we asked the subjects to choose the fairest level of progressiveness, giving the option of choosing negative taxes for the poor. Using actual government statistics, we divided taxpayers into three groups, each supplying a third 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-percentage tax, had a tax level of 25% for each group. Each cut of a goods or services lowered the baseline by 5%. Subjects could adjust progressivity up or down. Consistent with the prior research on disaggregation effects, 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. We were correct.

Six subjects always chose the least progressive distribution, which reflected 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 in tax rate of 24.2% (in absolute percentage terms) between the high and low income groups (e.g., tax rates of 15%–39.2%). As we and others have found repeatedly, most subjects want at least moderate progression in the allocation of tax burdens.

We next calculated, for each subject, the mean effect of each cut of goods or services on progressiveness, first ignoring the effect of cuts on out-of-pocket cost. The mean effects (in the change in percentage of difference between high and low groups) were, respectively, 1.1% for defense ($t(77) = 1.70, p = .0931$), 0.1% for health care (*ns*), 0.4% for education (*ns*), and 0.4% for social security (*ns*), 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.

Cuts do affect out-of-pocket costs, however, at least for three of the goods and services of interest: health care, education, and social security, both in the experiment and 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 when these three goods and services were cut. An attempt to make such compensation may account for the difference between the three goods and services and defense; but do subjects compensate enough?

We found that for all three of the cost-yielding cuts (health care, education, social security), subjects corrected far less than would be required even to get close to maintaining constant redistribution across conditions (minimum $t(77) = 12.45, p < .0001$). Although some subjects attempted to offset the cost-increasing effects of cuts, on average the attempts fell far short of attaining the apparent goal.

Figure 2 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 (this is inferred, because the subjects did not actually see it). Figure 2 gives an excellent look at the isolation effect or disaggregation bias playing out in a unified tax and spending

progressivity decreased as the number of cuts increased—disappearing altogether with enough downsizing of government.

Public Policy Analysis

We continue to work on additional experiments to refine and expand our understanding of how ordinary subjects think about tax. Ultimately, we are interested in moving beyond description alone to advance a realistic normative theory of taxation—an analysis of how to improve tax law. The literature on the analysis and critique of real-world tax systems tends to come from either a welfarist perspective (Atkinson, 1996; Mirrlees, 1971; Slemrod, 1990), emphasizing what is optimal in the sense of being welfare maximizing, or a political economic perspective (Becker, 1983; Doernberg & McChesney, 1987), pointing out how the motivations of real-world legislative agents can diverge from the welfare-maximizing desires of their principals. Steinmo's (1993) study is a relatively rare but helpful example of an attempt to analyze how tax systems actually emerge in various democratic settings and what role public opinion plays in that evolution. We believe that any full-scale descriptive model of tax—necessary as a 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.

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 or public finance system: its size and its distribution. The general reasons can be illustrated with an example of a hidden tax, such as the corporate income tax, as we have discussed above.

Most dramatically and problematically, cognitive psychology suggests that there can be a persistent wedge between utility and wealth maximization in public finance. (This is analogous to Kahneman's, 2000, distinction between "experienced" and "decision" utility). Citizens attempt to maximize their utility in making decisions, but they suffer from isolation or focusing effects, reacting to salient aspects of choice or decision sets and not taking a wider, globally consistent perspective. Decisions about public finance have real effects, however, and these real effects can lead to less wealth down the road. Citizens who maximize their decision utility on the basis of their limited view of the issue will later come to experience less real utility.

For example, citizens never feel that they are endowed with money that they do not have on account of a 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, 1994a). Cognitive psychology suggests that this will cause people to under-react to a loss of this money. We have also found that subjects will not think ahead, to consider who (including themselves!) might ultimately pay the hidden tax. Thus hidden taxes will flourish. In general, the tax system will gravitate toward taxes that impose the minimal psychic pain and expenditures that maximize psychic pleasure, regardless of the effects on actual wealth. Yet, because

money is a real good, capable of financing real improvements, there can be an opportunity lost for social betterment. The hidden tax may be more distorting—costly, in real terms—than the next best alternative. Wealth will be lost, not because people prefer hidden taxes, *per se*, but rather because people do not think about all the effects of hidden taxes in voicing a preference for them.

Hidden and other psychologically favored taxes might be expected to reduce alternative sources of government revenue, holding the size of government—its total expenditure level—constant. If true, the bias toward hidden taxes would only affect the choice of tax; but this still matters. Hidden taxes can be more distorting, and less redistributive, than a fully enlightened citizenry might prefer. The general isolation effect and, more particularly, the disaggregation bias (the tendency not to combine different taxes, e.g.) suggests that citizens will not naturally support countervailing changes in the taxes (or spending programs) within view in order to hold the desired level of redistribution constant. There is also little reason, however, 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 & 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 be obtained. Hidden taxes will not supplant other taxes, in other words, but will go to the most salient use at the time. 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, 1994a). As revenues came into the government, in a psychologically pleasing way, then office holders had incentives to spend the funds on salient goods and services, for example, 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 problem because the costs of social security benefits will one day outstrip payments. One solution might be to cut these benefits, at least to upper-income Americans who may need them less. The endowment and related effects suggest, however, that this can be difficult.

Politicians, who have incentives to make voters happy in the short to midterm, will choose a mix of minimally painful taxes and maximally pleasurable expenditures, not necessarily welfare-maximizing ones. Steinmo (1993) argued that U.S. tax policy, in part because of its fairly broad democratic involvement, is especially byzantine. 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 aversion to new taxes might have this effect. Also, the new taxes would be explicit, not hidden, the government having “maxed out” its sources of hidden taxes.

Moving from allocation to distribution, the other fundamental dimension of a

public finance system, we note that there is no clear, objective, universally accepted benchmark for the appropriate distribution or redistribution of wealth or income. Yet 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. This is 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.

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 by 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. Kaplow and Shavell (2002) made an analogous argument about the legal system generally. Yet, subjects may 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 will depend on the size and structure of the public sector. Efficiency and equity come into conflict. The isolation effect matters.

These are the major reasons to reconsider our general thinking about tax, because equity and efficiency, the size of the social pie and its distribution, can both be affected by widespread citizen cognitive error. Ordinary politics, far from correcting these mistakes, may only aggravate them, both because politicians can suffer from the same cognitive heuristics and biases and because no one has an incentive to correct citizen error. Indeed, the incentives are, rather, to pander to existing beliefs, however mistaken. As long as inconsistent thinking about tax remains rampant, public finance in democratic societies will be volatile, manipulable, and suboptimal.

What Is to Be Done?

Ultimately, our hope is that the very same cognitive psychology that helps to set out and describe the problem can point ways toward its amelioration or cure. Understanding the range of heuristics and biases in evidence as instances of isolation effects is useful toward this end. Public policy will improve if citizens and other decision makers can learn to take a wider perspective, taking into account all relevant information at the time of their decisions. In this section, we discuss some broad possibilities for improving citizen thinking about tax.

Education. We have started to explore the possibilities of various educational 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.

There is reason to be skeptical, however, 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 law. Worse, the fact that subjects seem to care about the stated intents behind policies (McCaffery

& Baron, in press), apart from their objective effects, means that rhetorically facile politicians can influence nonwelfarist outcomes. Besides, who is going to do the debiasing?

It is possible that increased financial education in schools and colleges could have two sorts of beneficial effects. First, some of the tools of economic analysis are helpful in simplifying our thinking about public policy, such as the idea of separating efficiency and distribution and the idea of public goods. These concepts are not necessarily difficult for citizens to use in their own thinking about policy. In general—and often to the surprise of teachers and professors—education works (e.g., Nisbett et al., 1987).

Second, education can also play a role in helping people to understand the value of expertise. Insofar as policy issues are not easily understood by citizens in the time available, modern governments have increasingly turned over various matters to experts. Some examples include the regulation of risks; drugs; the setting of interest rates; and, indeed, the interpretation of the law. Citizens should, ideally, understand what knowledge the experts are using and how they came to that knowledge (Baron, 1993), and of course the institutions in question should be subject to democratic checks and balances (Steinmo, 1993). In the long run (as we discuss later), perhaps a government office of public finance could make recommendations to the legislature about the design of tax and spending systems, rather than leaving these matters to the legislators themselves. Our findings could provide a partial justification for such institutional changes.

Political constraints. In the absence of effective public education, or as a supplement to it, 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. Far from serving as such a mechanism in the public sector, however, there is reason to believe that politicians can exacerbate the wedge, in the principal-agent problem familiar to the political economic tradition in public finance. Even if, for example, 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—there is no mechanism whereby he or she personally, or even his or 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 goods point suggests, for the very effort to shed light on taxes might hurt a politician. Suppose that some politician were 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 for 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.

Yet, once again, the understanding of isolation effects as being at the root of the problem is helpful. Our research has shown that preference shifts and reversals

can follow from varying the presentation of aspects of public finance problems: looking at benefits in isolation of burdens, one tax in isolation of another, a tax in isolation of its longer term effects. Institutional rules can compel better integration of data. Thus, for example, the tax expenditure budget required by government accounting rules compels legislators to list the effects of tax deductions, exclusions, and credits on government revenues, as if they had spent money through nontaxation (McCaffery, 1994a). This accounting device has played a helpful role in generating better, more transparent optics in the tax policy process. Requiring economic impact statements akin to environmental ones may help ordinary subjects improve their longer term thinking about indirect effects. Analogously, balanced budget amendments, now common in many states, force the government to match general levels of tax and spending by requiring more specific offset rules, such as the now-expired “pay-go” ones, and, for example, requiring specific tax cuts to be matched against specific spending cuts. All such devices might help improve consistency in judgment and evaluation by undermining the tendency to isolate out logically relevant factors.

Such political constraints can serve two helpful, related functions. One, they curtail the possibility of a principal-agent problem, whereby legislators might exploit citizen cognitive error for short term political gain. Two, they work in tandem with citizen education efforts, discussed above, by providing more and better information—specifically, better integrated information—to the people.

Structural reform. Finally, one ought to consider the possibility that elected officials, subject to rather short-term political and electoral constraints (Steinmo, 1993), are simply not the right actors to overcome cognitive error—their own or their public’s—in the first place. Although the task of designing a better, more logical and consistent policymaking body is a complex one, cognitive psychology gives reason to believe that it is possible. In particular, research has shown that experts can become better at integrating information and reaching consistent judgments (Ericsson & Smith, 1991). Economic training, in particular, has a powerful effect on understanding of economic theory and willingness to apply that theory to policy issues (Baron et al., 1993; Baron & Ritov, 1993; Caplan, 2002). Of course, increased understanding of economics—such as would result if more questions about it were included on examinations taken for college entrance—might not make everyone an expert. Better education, however, might increase understanding enough so that citizens are more willing to trust expert agencies of government to design the details of a tax system.

Another possibility to improve the situation is to do what private markets do and inject competition into tax system design. As we have noted throughout, a prominent example of a hidden, and thus cognitively favored, tax is the corporate income tax, or more generally, business taxes. The appeal of such taxes, confirmed in our studies, naturally leads to the question of why such taxes are, in fact, relatively low: The corporate income tax is a far distant third to personal income and payroll taxes as a percentage of federal revenues in the United States, accounting for less than 10% of the total budget. The answer seems to lie in competition between jurisdictions, which may serve much the same arbitrage role in public settings as in private ones. A jurisdiction that has been able to lead its citizens into a cognitively favored, but economically disfavored, tax will pay a price for the inefficiency, perhaps leading to welfare-enhancing reform. Such

competition has its limits, however, and there is ample evidence that the United States and other major nations are attempting to suppress the effects of tax competition. Normative welfare economics needs to examine the institutions of public finance with the lessons of behavioral economics in mind. Until this happens, we are left with a panoply of partial answers and no single solution to what can be a widespread and deep problem.

Conclusion

The average person suffers from a wide range of heuristics and biases in thinking about tax and public finance, leading to inconsistent judgment and decision making. These various biases can be seen as instances of a more general isolation or focusing effect. Subjects decide complex matters—and tax raises a host of complex matters—quickly, responding to the most salient aspect of a choice set or decision problem. They fail to take into account logically relevant information that is not immediately available to their mental models. In tax, this means that people can fail to integrate parallel tax systems or tax and spending systems to form globally consistent end-state allocations and distribution, react to the labels or metrics used in the discussion on public finance, and prefer hidden taxes despite the fact that this distorts their own preferred allocation or distribution of resources. Equity and efficiency can both suffer as a result.

There is hope. Understanding that the biases stem from a common isolation effect leads to proposals to educate ordinary subjects by integrating the presentation of relevant data or constraining political actors to do so. Other structural reforms, such as better use of experts in public finance decision making or injecting the discipline of markets where possible, are worth exploring. None of this will be easy, but given the current state of affairs, the task of arriving at better thinking about tax is at once daunting and critically important.

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