

# Uncovering Hidden Taxes and Indirect Effects

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## **Abstract**

People generally prefer hidden taxes to direct taxes. They minimize or altogether ignore the longer-term or indirect effects of tax policies, such as any attendant rise in prices. These preferences may be symptoms of general tendencies not to think ahead about the effects of public policies. These general tendencies in turn are multiply determined by many cognitive heuristics and biases, including the endowment effect (because people may not feel as if they are “losing” a well-hidden tax).

In this paper, we consider several reasons why people ignore or under-account for hidden taxes and indirect effects, including ignorance of such effects, optimism that any adverse effects will not fall on them, an intuition that legislative intentions matter to normative evaluation of policies, and the more general “isolation effect.” Five experiments conducted on the World-Wide Web and using within-subject design attempt to parse through these effects, and to consider the influence of various possible debiasing techniques. The results point to the depth of the perceptual problems in the popular understanding of tax and economic policies, and offer only limited hope for light at the end of the day through debiasing.

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## 1 Introduction

It does not require the insights of modern behavioral economics and psychology to aver that people do not like to pay taxes. What the contemporary literature can shed light on is why and to what extent people prefer government surcharges labeled as something other than taxes — such as the “contributions” in the United States social security or payroll tax system (McCaffery & Baron 2003) — to those called “taxes,” and why citizens seem far less antagonistic to “hidden” than to transparent taxes (McCaffery & Baron, forthcoming, Eckel, Grossman & Johnston, 2004).

As a fact of the matter, 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 payor’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 they that were entitled to it in the first place. In the case of fully hidden taxes, as McCaffery (1994) 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.

Reflection reveals that 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 in-

direct 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. This can create a wedge between hedonic utility and wealth maximization: what is more pleasing may be less wealth-enhancing. Cognitive biases can also lead to a tension between the two welfare theorems, pitting equity against efficiency, because the *form* of public finance can affect the *substance* of such matters as bottom-line distribution (Baron & McCaffery, draft).

The research presented here goes beyond the 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. Such a pervasive problem appears to be over-determined by many sometimes overlapping causes. We consider various possibilities:

- *Ignorance*: People do not know about the indirect effects. They simply do not know, for example, that business taxes are (partially) passed on to consumers and workers.
- *Optimism*: People overly discount future events, and/or are overly optimistic in their assessments of the likelihood of future bads affecting them. For example, people believe that hidden taxes will fall on others.
- *Intentionality Bias*: People may evaluate policies by thinking about the morality of the intention that produced them, even where this intentionality is hard to get at (because it derives from multi-member bodies, such as Congress, or is known only to strategically behaving politicians) and logically irrelevant to the effects of interest. People may be more likely to ascribe moral motivations to direct but not to indirect effects: they consider indirect effects to be unintended, hence morally not blameworthy.

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- *Isolation effect*: People know about the effects but do not consider them, or do not consider them enough, when evaluating the attraction of the tax or other payment mechanism. Subjects attend only to data or issues immediately before them. We and others have called this an isolation effect (McCaffery & Baron, 2003; Camerer, 2000; Read, Loewenstein & Rabin, 1999; Kahneman & Lovallo, 1993).

Yet other effects, such as the *identifiable victim effect*, whereby subjects react more strongly to specifically identifiable than to statistical victims (Small and Loewenstein 2003, 2004), may be at work in popular perceptions of tax policy, and particularly the effects we study here. A transparent tax, after all, falls on someone that the subjects can imagine; a fully hidden tax does not. In this paper, we attempt to sort through those just listed as a way of understanding the general tendency not to think ahead, and consider indirect effects.

In the experiments that follow, we test these different hypotheses, and also turn our attention to various possible mechanisms to reduce the harmful influence of the effects we find.

## 2 General Method and Hypotheses

### 2.1 General Method

Our experiments each follow the basic method we have employed elsewhere (McCaffery & Baron 2003, McCaffery & Baron, forthcoming). In each, subjects completed a questionnaire on the World Wide Web. The Web-based experimentation allowed us to model complex real-world situations with accuracy and to tailor questionnaires for sophisticated within-subject testing. The subjects found the questionnaire because of previous postings to news-groups for other studies and links from various frequently visited Web pages. Subjects were paid \$3 or \$4 and had to provide their name, address, and social security number (if they lived in the U. S.) in order to receive pay. The questionnaires were run by a JavaScript program, which checked to see that all responses were complete and in the required range.

Each experiment began with an introductory page. These pages gave detailed explanations of the factual and legal contexts for the experiment, as well as some motivation for the normative principles. Subjects were then presented with a series of screens, typically 32, in which they had to answer specific questions and/or supply specific values. Subjects had to complete each screen to move on to the next screen. The order of the screens was randomized across subjects. We time the subjects without their knowledge (unless they read this), and we eliminate subjects who go extremely fast, especially when such speed is associated with unresponsiveness to variables that are manipulated but not of primary interest. Many of our experiments have had internal checks for understanding, and we have found subjects generally careful and thoughtful in completing them.

Our within-subject design, with relatively limited subject pools, has of course some familiar limitations. We cannot say whether or not particular demographic characteristics of the subjects, including their actual or perceived self-interest, drive the results. Note, however, that, consistent with the general cognitive heuristics and biases literature, we were testing for within-subject variation. The principal findings we report reflect within-subject inconsistency, generally in line with the predictions of prior theory. In terms of external validity, it is worth noting not only that our findings are consistent with well-established literature in other domains, but also, in most cases where there is a direct parallel, with the shape of tax law in most advanced Western economies. Also, the educational and income level of the subject panel is comparable to that of the U.S., although the sex distribution — mostly women — is not (Babcock et al 2003).

## **2.2 Hypotheses**

Consistent with the general behavioral economics literature and our own prior research on popular perceptions of tax, 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, even when these effects were in conflict with other values (for example, re-

distribution or equity) at stake in the choices presented. Given the tension, we expected that farming manipulations or debiasing techniques could elicit preference shifts and reversals. We expected that debiasing would also move revealed preferences in the direction suggested by the deeper, more fundamental values.

### 3 Experiment 1: Distributive effects

Tax systems can be used not only to raise money, but to spend it, when deductions or credits are in play. Our first experiment tested the hypothesis that people do not think ahead when they consider how to raise money for or how to pay for a good. In particular, they do not adequately consider the distributive effects of various tax policies, even though they care about such effects, standing alone.

We examined raising money and paying for various forms of insurance, such as health insurance, that could be provided either privately or by the government. The use of insurance eliminated a more extensive issue of cross-subsidization, discussed below, because the insurance is provided *ex ante* to the distribution of outcomes under the various risky possibilities. We compared raising money (“Raise”) by an income tax with raising it by a payroll and a business tax. These taxes differ in their distributive properties, of course. We hypothesized that people would tend to oppose an income tax until they thought about its redistributive effects. Conversely (but consistently), we expected that people would favor a business tax until they thought about its ultimate effects and incidence.

We compared payment for the forms of insurance (“Pay”) through tax deductions with payment through tax credits and direct payment. These alternative means of payment differ in their distributive effects, too, with a deduction under a progressive marginal rate income tax system having a regressive effect (that is, benefitting the rich more than the not-rich, *ceteris paribus*). We hypothesized that people would favor deductions until they thought about these distributive effects.

The experiment involved a baseline condition followed by two debiasing conditions. The order of the debiasing was counterbalanced. It consisted of asking questions about the

incentive and distributive effects of the options. It 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.

This first experiment thus got at both the general syndrome — that failure to think ahead about hidden taxes and indirect effects — as well as on the ignorance explanation for it.

### 3.1 Method

The questionnaire was completed by 201 subjects, ages 18–69 (median 37), 33% male, 19% students.

It concerned four goods: health, disability and unemployment insurance, and “terrorism insurance (for property).” The goods were presented in 6 cycles of four, for a total of 24 trials, in the same fixed order. The first two cycles were, respectively, about raising the money for the good and about paying for the good. The next four cycles examined the effect of debiasing manipulations, with the Raise debiasing coming in the third or fifth cycle and the Pay debiasing in the fourth or sixth, counterbalanced across subjects as follows:

Cycle:	1	2	3	4	5	6
Group 1:	Raise	Pay	Raise de-bias	Pay	Raise	Pay de-bias
Group 2:	Raise	Pay	Raise	Pay de-bias	Raise de-bias	Pay

The Raise and Pay conditions were identical each time they occurred, and subjects were warned about the repetitions. This design would be most sensitive if the debiasing effects did not carry over to subsequent questions. But such carry-over is possible not only for the same questions coming later but also for the other questions. Subjects may for example get the general idea of thinking about distributive effects and continue to so think on later questions. We discuss this below.

All subjects were first shown the following introduction:

## Taxes and expenditures

This is about the functions of government in providing various forms of insurance. The governments involved are at many levels: national, state/province, local. The questions concern how government should pay for various insurance “goods,” such as health insurance, and how government should collect the money for them. Assume, in each case, that government pays for some of the good in question, but people can buy more of it.

Here are some things to remember:

- The **business tax** is a tax on the profits that a business makes. To get the money for the tax, the business must raise prices or reduce the money available for employees, managers, or owners (including stock-holders).
- The **income tax** is graduated. Rich people pay a higher percentage of their income than poor people do.
- The **payroll tax** is the same percent for all income levels. (Assume that this is so for purposes of this study, although in fact rich people pay a smaller percentage.)
- Income taxes and payroll taxes generate about the same amount of revenue on the whole.
- When we talk about a “proportional increase,” we mean that the tax for everyone goes up by the same proportion of the **tax** they pay before. For example, if the proportional increase is 10%, then a tax of 20% goes up to 22%, and a tax of 10% goes up to 11%.
- A tax **deduction** is subtracted from income before the income tax is calculated.
- A tax **credit** is subtracted from the tax itself. Suppose that, if the credit is larger than a person’s total tax, then the person gets a refund.

This initial screen concluded with a warning about the repeated questions, and gave a few technical instructions. After this, the 24 screen followed, 6 cycles each for the 4 forms of insurance. Here is a typical Raise question:

The good in question is health insurance. These questions are about how to raise the money. Suppose all policies raise the same amount of money.

Which of these two policies is better on the whole?

Proportional increase in **taxes on business profits**.

Proportional increase in **income taxes**.

No difference.

Which of these two policies is better on the whole?

Proportional increase in **payroll taxes**.

Proportional increase in **income taxes**.

No difference.

Which of these two policies is better **for the poor**?

[This question was asked for both pairs.]

The Pay questions followed the description of the good:

Which of these two policies is better on the whole?

Government pays directly.

Tax **deduction** (subtracted from income before tax calculation).

No difference.

Which of these two policies is better on the whole?

Tax **credit** (subtracted from tax or refunded).

Tax **deduction** (subtracted from income before tax calculation).

No difference.

Which of these two policies is better **for the poor**?

[This question was asked for both pairs.]

The following is an example of the debiasing manipulation for Raise. These followed the description of the good:

If you ran a company that sold health insurance and made a small profit, and your taxes on that profit increased, what do you think you would do? (Click Yes or No for each. Make your best guess.)

Would you let your profit decrease? [yes no buttons before each option]

Would you reduce wages of managers and executives (compared to what they would otherwise be)?

Would you reduce wages of your employees (compared to what they would be)?

Would you raise prices to those who buy health insurance?

If wages of your employees were cut, who would be affected more?

[Rich people, Poor people, Both equally]

If prices increased on health insurance, who would be affected more?

[Rich people, Poor people, Both equally] [ If profits were reduced, who would be affected more?

[Rich people, Poor people, Both equally]

If wages of managers or executives were reduced, who would be affected more?

[Rich people, Poor people, Both equally]

Payroll taxes are a flat percent of income, and income taxes are a higher percent for higher income. The two taxes generate about the same amount of revenue.

Who pays more income tax than payroll tax?

[Rich people, Poor people, Both equally]

Who pays more payroll tax than income tax?

[Rich people, Poor people, Both equally]

Suppose one tax must increase by 10% of whatever it is now. Which increase has **less** effect on poor people?

[Income tax, Payroll tax, Both equal]

Which of these two policies do you now think is better on the whole? Proportional increase in **taxes on business profits**.

Proportional increase in **income taxes**.

No difference.

Which of these two policies do you now think is better on the whole? Proportional increase in **payroll taxes**.

Proportional increase in **income taxes**.

No difference.

The debiasing for Pay was similar, explaining how tax deductions, credits, and payments work, and drawing attention to the fact that deductions benefit the rich more than the not-rich, all else equal.

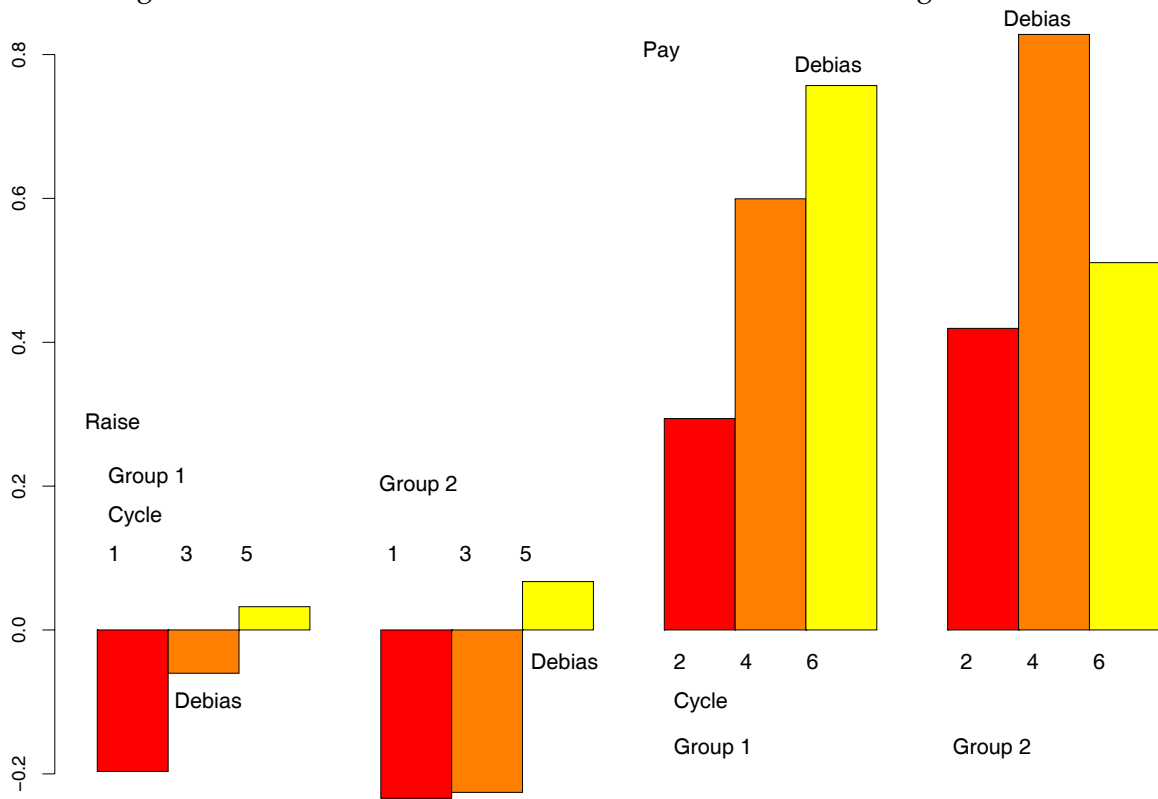
### 3.2 Results

The main hypotheses concerned attitudes toward raising the money through income vs. payroll or business taxes, and attitudes against paying through deductions vs. direct payments or tax credits, before and after debiasing. We call these “favorable” attitudes, taking the point of view of the poor, as most subjects seemed to consider.

Figure 1 shows the proportion of favorable attitudes by the sequence of trials, separately for Pay and Raise, and separately for the two groups of subjects, who differed in where the debiasing came. An overall test of whether attitudes were more favorable during debiasing in the last four cycles, combining Raise and Pay, was significant ( $t_{199} = 2.62$ ,  $p = .0048$  one tailed; based on the group difference in the individual-subject interaction terms between cycle and Pay/Raise). The result was in the predicted direction for both Pay and Raise — with debiasing moving subjects toward more favorable attitudes towards the poor — but significant only for Raise ( $t_{199} = 2.39$ ,  $p = .0089$ ).

Note that this comparison would be reduced by carry-over effects. It is likely that such

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



effects occurred. Figure 1 shows that attitudes became more favorable over trials in all conditions. One comparison of interest is between the first two cycles and the second two cycles for the condition (Pay vs. Raise) that did *not* get debiasing within the second two cycles. Attitude for Raise in Group 2 did not change from Cycle 1 to Cycle 3 ( $t_{92} = 0.10$ ), so debiasing Pay had no apparent effect on Raise attitude. (It would have had an effect only for the last three items of the four, however.) But Pay in Group 1 did show an increase from Cycle 2 to Cycle 4 ( $t_{107} = 2.70$ ,  $p = 0.0040$  one tailed). Thus, the failure to find an effect for Pay in the analysis described in the last paragraph may result in part from insensitivity: Pay was already affected by debiasing of Raise.

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. This point emerges because a deduction is integral to an income tax — it is one of the steps in arriving at a figure of “income” to be taxed — whereas a tax credit, which can be used under any tax system, and comes after the computation of income, is not, and a direct payment, which is economically equivalent to a tax credit, requires no tax system at all. Hence an aversion to the income tax, *per se*, seems to trump a desire for redistribution.

This finding is especially strong given that the public good being provided is insurance against various harms (health, disability, unemployment, and terrorism). The dominant effect of providing such insurance, *ex ante* to the distribution of harmful outcomes, is redistributive along *income-based* lines. That is, there is little if any cross-subsidy going on, from the healthy to the sick, or the employed to the unemployed. The preferences

revealed in the Pay conditions are thus generally about transferring resources from the rich to the not-rich; but these preferences are *not* observed, generally, in the Raise conditions. Debiasing, while moving things in the right direction — towards consistency — hardly overcomes the gap.

In any event, the overall results support our hypotheses. But further analysis suggests that individuals differ extensively in their response to debiasing. We might in fact expect that people who oppose redistribution would be unaffected by the arguments provided, which assumed that the subjects cared about helping the poor.

Overall, we found a polarization effect. Responses on the last cycle were more extreme than those in the first cycle. In particular, combining Pay and Raise, the change from first to last was correlated with the mean of first and last ( $r = .14$ ,  $t_{199} = 2.03$ ,  $p = 0.0436$  two tailed). Looking at Pay and Raise separately, the effect was significant only for Raise ( $r = .18$ ,  $t_{199} = 2.56$ ,  $p = .0112$ ; for Pay,  $t = 0.11$ ).

The change was also correlated (combining Pay and Raise) with a score indicating that the favored method was better for the poor, from an answer to the debiasing questions ( $r = .14$ ,  $t = 2.04$ ,  $p = 0.0427$ ).<sup>1</sup> This score was also correlated with the overall mean ( $r = .25$ ,  $t = 3.58$ ,  $p = .0004$ ). In sum, people who initially favor or oppose a redistributive tax tend to answer the debiasing questions in a way consistent with their views, and, apparently as a result, become more extreme in their opinions.

## 4 Experiment 2: Direct and indirect effects

The first experiment concerned a general ignorance about how a rather static matter — the redistributive effects of a tax or payment mechanism — operated. Taxes also have longer term effects, as on prices.

In our second experiment, we presented six policy changes, each with a beneficial direct

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<sup>1</sup>The score for Pay was just the sum of the answers to the debiasing questions, with their signs switched when needed. For Raise, we multiplied the answer about incidence of the tax by the answer to whether that incidence would help the rich or the poor.

effect and a harmful indirect effect, or vice versa. We asked if people knew the direction of the effect, to continue to test for the effects of ignorance. We asked about attitude toward the proposal before and after telling them about the directions of the effects. Finally, we asked about attitude if neither effect were intended, to begin to get at a possible intentionality bias.

#### 4.1 Method

The questionnaire was completed by 125 subjects (ages 21–60, median 38; 13% male). The introduction read:

##### **Tax policies**

This questionnaire is about changes in policies for taxes. In each case, you are asked about a change in policy. We ask you to evaluate these changes and their effects.

If the change is “creation” of some tax, suppose that the tax doesn’t already exist in your country. If the change is “elimination” or “reduction” of some tax, assume that the tax does exist.

There are 24 screens: 20 with 3 questions each, and 4 with 2 questions each.

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

Each of the 12 policies (two directions of each of the six) was presented twice in a random order chosen separately for each subject. (Some of the subjects, because of a programming error, received the items in the above fixed order, but this does not affect the logic of the design.) On the first presentation, using the proposed change as elimination of tax on business profits as an example, the questions asked for each of the 12 items were:

How do you think this change will affect the money available for government  
programs?

more money available for government programs

no predictable effect

less money available for government programs

How do you think this change will affect the prices for goods and services?

higher prices for goods and services

no predictable effect

lower prices for goods and services

How do you feel about the elimination of a tax on business profits?

Strongly favor

Moderately favor

Neutral or mixed

Moderately oppose

Strongly oppose

The first question concerned the direct effect and was asked in every case. The second question concerned the indirect effect and was asked in 2/3 of the cases. (We wanted enough cases in which it was asked so as to analyze the correlates of the answer.) The third question was the attitude question.

In the second pass through the 12 items, the questions were as follows, again using the elimination of tax on business profits as an example:

This change leads to two effects:

A. less money available for government programs

B. lower prices for goods and services.

Why do you think a government would make such a change?

to bring about less money available for government programs

to bring about lower prices for goods and services

for some other reason or no good reason

How do you feel about the elimination of a tax on business profits?

[Same response options as before.]

Now suppose a different policy change, X, would cause both effects, to the same extent. The two effects are known to those who choose X, but they choose X for another reason, which you regard as neutral, neither good nor bad. Considering these two effects, how would you feel about X?

[Same response options as before.]

The subjects were first told about the direct and indirect effects. Then they were asked why a government might institute the policy. This was an additional test of understanding, but it also called attention to the intention behind the policy. The next question was a repetition of the attitude question, that could be compared to the first question prior to the debiasing manipulation. Presumably attitudes will moderate when subjects are told about the two effects, especially if they did not already know of both. Finally, we asked about attitudes if neither effect was intended, to test the role of intention. If perceived intention plays a role in subjects' evaluation of a policy, then attitudes should moderate still further.

## 4.2 Results

### 4.2.1 Knowledge of effects

On the first pass-through, we asked about direct and indirect effects. 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, more imperfect on the latter.

To assess knowledge on individual policies we combined the two directions. Table 1 shows the mean scores for each of the 6 effects, with a correct answer scored as 1 and its opposite scored as  $-1$ . The means were significantly positive for all the direct effects and for four of the six indirect effects (all by *t* tests,  $p < .005$ ), but they were non-significant for the mortgage and health items for the indirect effects. It is possible that subjects did not understand the economic effects for these two items, each widely popular and a feature of current law.<sup>2</sup> But it is also possible that our question was unclear, allowing subjects to interpret "price" as "total cost (taking into account the deduction)," a subtle distinction.

<sup>2</sup>McCaffery (1994) reports a real classroom observation in which students at an elite law school, having been taught the "capitalization" effect, whereby tax benefits such as the mortgage interest deduction are factored into the price of a good (e.g., housing), and given an exam question in which, by design, there were no benefits

For caution, we eliminated these two items from some analysis that might depend on understanding of our question as intended (which we shall note).

Policies:	Business	Mortgages	Health	Municipals	Rates	Imports
Direct:	0.54	0.23	0.54	0.33	0.77	0.34
Indirect:	0.49	0.04	-0.05	0.19	0.34	0.48

Table 1: Knowledge of direct and indirect effects for the six policies.

In the second pass through, subjects were told about the indirect effects. We expected this to move attitudes in a negative direction, because subjects did not always know about the effects. 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, after the description ( $t_{124} = 4.75$  for the difference,  $p = 0.0000$ , with the mortgage and health items omitted). Thinking through direct and indirect effects lowers support for the underlying policies.

#### 4.2.2 Failure to think of indirect effects

Recall that the indirect effects were not mentioned in one-third of the cases. We scored mean attitude toward the policy on a scale where 2 is “strongly favor,” 0 is neutrality, and  $-2$  is “strongly oppose.” The coding was reversed when the direction of the policy was reversed, so that we expected positive scores in general.

The mean attitude was higher when the indirect effect was not mentioned (0.70) than when it was mentioned (0.35;  $t_{123} = 3.40$ , across subjects,  $p = .0009$ , excluding the ambiguous cases — but still significant at  $p = .0430$  when they were included). Subjects appear to fail to think of the indirect effect when it is not mentioned.

of renting as opposed to owning, still overwhelmingly preferred the advice that owning a home was tax beneficial because of the mortgage interest deduction.

### 4.2.3 Intention

If subjects believe that intentionality matters, and further that the direct effect of a policy is intended, they ought to 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 ( $t_{124} = 6.58, p = 0.0000$ ).

But this final question in Experiment 2 was rather abstract. It is thus for example possible that the moderation is a result of considering the unknown “other reason” for which the policy was chosen. Subjects may have tried to imagine why the policy was chosen if not for the favorable reason stated in the scenario. Hence, in the next experiment, we do not mention other reasons.

## 5 Experiment 3: Direct, indirect, and intention

All tax changes involve costs for some and benefits for others, and the two groups may overlap. For example, a tax increase can benefit those who use government services or future taxpayers, if the increase is used to reduce the debt. But the tax also imposes costs for those who pay the taxes, and for businesses (hence workers and stockholders) whose revenues may fall because of reduced economic activity occasioned by the tax. Specific taxes often directly help one group at the expense of everyone else.

We designed Experiment 3 so that each tax or other policy change was associated with two beneficial consequences and two harmful one. We were interested in continuing the exploration of the intentionality bias begun in Experiment 2.

In the first part, we asked people about the negative effects, to see whether inducing subjects to think about these effects would reduce the policy’s attractiveness. 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 effect associated with the second beneficial outcome. We then asked — in the second part of the design — whether subjects preferred the policy when it was justified by both stated reasons or by just one of them. We asked this for both reasons, that is, the one with and the one without the harmful effect. Note that the policy always had a stated affirmative reason, unlike the abstract final question in Experiment 2.

Finally, in the second part, we asked subjects their opinion about expert predictions of negative effects. Several of the policies had negative future effects, so we could ask about belief in predictions of such effects.

## 5.1 Method

The questionnaire was completed by 118 subjects, but data from 14 were omitted because they did it much faster than the rest. The 104 subjects included had a median age of 40 (range, 19–67), and 36% were male.

The questionnaire, titled “Tax policies,” began with a brief introduction: “This questionnaire is about changes in policies for taxes. In each case, you are asked about a change in policy. We ask you to evaluate these changes and their effects.” It had 32 screens. The first 16 were of the following form:

The proposed change is:  
an increase in taxes on business profits.

This change has two effects (among others):  
A. an increase in money available for current government programs.  
B. an increase in money to pay off government debt.

How do you think this change will affect wages for employees of businesses?  
increase  
no predictable effect  
decrease

How do you think this change will affect prices for goods and services produced by businesses?  
increase  
no predictable effect  
decrease

How do you feel about an increase in taxes on business profits?

Strongly favor

Moderately favor

Neutral or mixed

Moderately oppose

Strongly oppose

Each of the two “How do you think” questions (concerning negative effects) was asked on half of the screens, independently, so that a quarter of the screens had both questions and a quarter had neither. Each subject was assigned randomly to one of four groups, that differed in which cases went with each set of questions, so that the assignment of questions to cases was counterbalanced across subjects. Otherwise, the order of items was randomized separately for each subject, with the constraint that the first 16 and last 16 screens had the same order. Each case was presented twice, once with “increase” and once with “decrease,” and the negative and positive effects switched.

The following table shows the cases we used and their effects. Note that five of the cases involve future effects.

Positive effects of increases, negative of decreases		
business tax	money for programs -	for debt payment -
import tax	lost jobs +	money for programs -
farm subsidies	food cost +	farm jobs -
tax for rich	rich-poor disparity +	future taxes +
mortgage deduction	borrowing cost +	construction jobs -
health ins deduct	people insured -	hospital cost +
muni bond deduct	cities' interest costs +	public projects -
prescriptions	medicine for older -	research on older -
Negative effects of increases, positive of decreases		
business tax	wages -	prices +
import tax	foreign jobs -	prices +
farm subsidies	money for programs -	foreign farmers -
tax for rich	early retirement +	spending -
mortgage deduction	home prices +	future taxes +
health ins deduct	charge for insurance +	future taxes +
muni bond deduct	bond cost +	future taxes +
prescriptions	money for programs -	future taxes +

The second 16 screens used the following format. The first two questions concerned intent. Each question asked whether an additional purpose would increase the subject's support for the policy. The third question asked about trust in the predictions of experts. All the items used 4% as the prediction, which we assumed to be plausible, given that the magnitude of the proposed increase or decrease was not specified. We were particularly interested in trust in predictions about future taxes (as we continue to explore in the final two experiments), but we asked about all of the items listed in the right-most column of the above table (which included all the questions about future taxes).<sup>3</sup>

<sup>3</sup>An error in this question was discovered by some of the early subjects. By the time it was corrected, 51

The proposed change is:  
an increase in taxes on business profits.

This change might be made because of two effects (among others):

- A. an increase in money available for current government programs.
- B. an increase in money to pay off government debt

Suppose A was the government's original intention in making the change. How would you feel if B were also an important reason for it, according to many supporters of the change?

I would support the proposal less if B were a reason as well as A.

This would not affect my support.

I would support the proposal more if B were a reason as well as A.

Suppose B was the government's original intention in making the change. How would you feel if A were also an important reason for it, according to many supporters of the change?

I would support the proposal less if A were a reason as well as B.

This would not affect my support.

I would support the proposal more if A were a reason as well as B.

Suppose that a panel of non-partisan economists predicts that prices for goods and services produced by businesses will increase by 4% as a result of this change. What do you think the actual increase will be?

8% or more

Closer to 6%

4%

Closer to 2%

Closer to 0% (or less)

## 5.2 Results

### 5.2.1 Effect of asking about negative effects

Just asking subjects to consider whether the negative effects occurred, on the whole, reduced their support for the proposals. To test this, we correlated the number of negative-effect questions (0, 1, or 2) with the last question in the first part, about support for the proposal, within each subject. The mean correlation was  $-0.11$ , which was significantly less than zero across subjects ( $t_{103} = -5.91, p = 0.0000$ ).

subjects had started the study. We used the data from the remaining 53.

Support also depended on subjects' answers, given that the questions were asked. On the whole, 51% of the responses were correct as defined in the above table — e.g., a business tax would increase prices and reduce wages — and 20% were incorrect (in the opposite direction). We correlated these responses — coded as 1 for correct and  $-1$  for incorrect, and then averaged when two questions were asked — with the support question within each subject. The mean correlation was  $-0.31$  ( $t_{102} = -10.14$ ,  $p = 0.0000$ , across subjects). In sum, understanding or acknowledgment that a proposal causes bad effects reduces support for the proposal.

Questions about future taxes did not differ systematically from any other questions about negative effects, either in their number of correct answers or in their effect on support.

### 5.2.2 Intention

Intention to produce additional beneficial effects increased support for the proposal, as indicated by the two intentionality questions in the second part. In 39% of the responses the extra reason would increase support, and in 14% it would decrease support. The mean increase of  $.25$  (where increased support is 1 and decreased support is  $-1$ ) was significant across subjects ( $t_{103} = 7.34$ ,  $p = 0.0000$ ).

### 5.2.3 Trust in experts

Contrary to our hypothesis, most subjects thought that experts were excessively optimistic. They thought that the negative effects would be larger than what the experts predicted. The mean response corresponded to 4.42%, as opposed to the 4% prediction, and this was significantly greater than 4% across subjects ( $t_{52} = 2.47$ ,  $p = 0.0170$ ). Questions about future taxes again did not differ from other questions in this respect.

Although most subjects thought that experts were optimistic, some subjects had extreme scores in the other direction. Five of these were significant at  $p < .05$ , in that direction, after correction for multiple tests (using the step-down resampling procedure of

Westfall & Young, 1993, as implemented by Dudoit & Ge, 2003).

### **5.3 Discussion**

In sum, people seem not to think about secondary negative effects of proposals for change. When they are reminded of these effects and when they understand them, they are less supportive of the proposals.

People also often do not understand the economic factors that cause the effects. These factors include not only incentive effects but also the effects of budget limitations.

Perceived intentionality matters as well. Effects of proposals seem to depend on whether they are intended. Thus, people may support proposals that have negative unintended side effects.

What does not seem to play much of a role is an under-estimation of future effects, once these effects are on the table. If anything, most people think that experts are excessively optimistic.

## **6 Experiment 4: Optimism about the future**

Optimism is another factor that can play a role in the evaluation of tax policies. Future costs may seem especially attractive when people do not know their effects. They may be optimistic that these costs, in the form of higher taxes or cuts in government programs, will be borne by someone else. The issue is especially relevant in contemporary times, of course, when large unfunded liabilities for government programs such as social security and medicare pose a major public policy challenge.

The present experiment asked people about their willingness to pay (WTP) for new government programs. There were five payment conditions, all presented together on the same screen: taxes paid now; taxes paid in 10 years; program cuts now; program cuts in 10 years; or some unspecified method (which could be only taxes or cuts) in 10 years. We hypothesized that people would be more willing to pay if costs were put off, even

though the cost was described as present value, and they would be more willing to pay if the source was unspecified. Note that the manipulation of question type was completely transparent. All five questions appeared together on the same screen.

## 6.1 Method

Seventy-five subjects completed the questionnaire: 26% were male, and their median age was 41 (range, 21–69). It began with an introductory page as follows:

### **New programs**

Suppose that the U.S. government is considering some new programs. (If you are not a U.S. resident, imagine that you are.)

We ask how much it should be willing to pay for each of these programs. We express the amount as a percent of all income taxes collected now.

In some questions, we ask about tax increases. A 2% increase in income taxes means that each taxpayer's taxes are 2% higher. It also means that the government has more money, equal to 2% of all income taxes collected.

A typical screen was:

Program: HEALTH COVERAGE FOR THOSE WITHOUT INSURANCE: As the cost of health care increases, more people will choose to go without health insurance. This program will subsidize payment for health insurance so that the percent of people without insurance will decrease by 75%.

Suppose that there is no U.S. budget deficit this year.

Suppose income taxes increased now to cover fully the cost of this program. What is the greatest tax increase, of those listed, that the government should accept in order to pay for this program, as a percent of total income taxes collected now? Every taxpayer would pay this increase.

(In all questions, if half the response were less than the cost of the program, the program would not be done. And 0% means you think that the program should simply not be done in this case.)

0%    1%    2%    3%    4%    5%    6%    8%    10%    12%

Suppose the new law required that the income tax be raised in 10 years to cover the cost fully (including the cost up to then). What is the greatest acceptable cost of the program, as a percent of total income taxes collected now? [Same choices.]

Suppose that, instead of raising taxes, there was an across-the-board cut in all other government programs, beginning now, sufficient to cover the cost fully. [Same question and choices.]

Suppose the new law required an across-the-board cut in all other government programs, beginning in 10 years, sufficient to cover the cost fully (including the cost up to then). [Same question and choices.]

Suppose that the new law simply mandated that the program would be paid for in ten years, fully, including the cost up to then. [Same question and choices.]

In half of the cases, instead of “no U.S. budget deficit this year,” it said, “the U.S. budget deficit is equal to 10% of all income taxes collected.” The cases were presented in a random order chosen for each subject.

The list of items was as follows. Each was presented with a description of why it was desirable.

- GUARANTEED ACCESS TO NEW MEDICAL TECHNOLOGY
- SOCIAL SECURITY MAINTENANCE
- HEALTH COVERAGE FOR THOSE WITHOUT INSURANCE
- DEVELOPMENT OF NEW ENERGY SOURCES
- PAYROLL TAX REDUCTION
- DEFENSE DEPARTMENT INCREASE FOR MORE TROOPS
- MORE MONEY TO FIGHT AIDS IN POOR COUNTRIES
- REDUCE CORPORATE INCOME TAXES

## 6.2 Results

The deficit variable had no overall effect on WTP (defined as percent of current income tax), although subjects differed consistently in the size and direction of its effect across the

five response measures ( $\alpha = .95$ ), some subjects showing an increase in WTP and others showing a decrease. Henceforth we collapse across this variable.

WTP did depend on the program: insurance 3.86%; energy 3.68%; and social security 3.62%; payroll tax cut 3.26%; medical technology 3.14%; defense 2.82%; AIDS 2.30%; and corporate tax 2.26%. We ignore these differences henceforth as well.

The main results concern the five payment questions. The means were: Tax 3.06%; Tax10 3.08%; Cut 3.01%; Cut10 2.94%; and Pay10 3.50% (where 10 indicates 10 years and Pay indicates that the method of payment is not specified, the last question). Within the first four questions, there was no overall significant effect of delay (now vs. later) or Tax vs. Cut, although subjects differed in the size and direction of both effects. Of primary interest, the Pay10 condition was significantly higher than Tax10 ( $t_{73} = 2.75, p = 0.0075$ ) and higher than Cut10 ( $t_{73} = 4.15, p = 0.0001$ ). In general, subjects favored the unspecified method of payment over either of the possible ways of realizing it.

Likewise, Pay10 was higher than either Tax ( $t_{73} = 2.89, p = 0.0050$ ) or Cut ( $t_{73} = 4.14, p = 0.0001$ ). People prefer putting off payment into the future, without specifying the method of payment, than paying now.

We can think of the main result as the result of optimism about how payment would be made when it was unspecified. In agreement with this interpretation, Pay10 was, on the average, roughly equal to each subject's maximum of Tax10 and Cut10, with the mean of these maxima being 3.34, which was not significantly less than the mean of Pay10 (3.50;  $t_{73} = 1.24, p = 0.2172$ ).<sup>4</sup>

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<sup>4</sup>However, Pay10 was higher by 0.51% than the maximum for medical technology and energy (on the average), and it was lower by 0.14% for AIDS and the corporation tax. The former, arguably, are the most future-oriented of the eight programs, and the latter are the least popular. These post-hoc findings suggest that optimism about future payment may depend on the type of program.

## 7 Experiment 5: A further test of optimism

Willingness to pay (WTP) seemed to track the favored method: cuts or taxes. In the present experiment, we asked subjects to make their best guess about how programs would be paid for, both in the present and the future. We found that their WTP when they did not know the method of payment was higher than the WTP implied by their best guess.

### 7.1 Method

Seventy-nine subjects completed the study; their ages ranged from 17 to 70 (median 37), and 23% were male.

The items were the same as in Experiment 4, with the addition of an item about research on new cancer drugs and antibiotics (shown in the example below).

Each of the 9 items was presented twice. One time, the questions were the Tax, Tax10, Cut and Cut10 questions used in the last experiment: all in the form of WTP questions as before. The other time, the questions were as follows:

Program: NEW CANCER DRUGS AND ANTIBIOTICS – Drug companies make the most money from drugs for chronic diseases. Cancer drugs and antibiotics are less profitable because they aren't taken for long periods. This program would increase funding for research on cancer drugs and antibiotics.

Suppose that the law to increase funding for NEW CANCER DRUGS AND ANTIBIOTICS required that it would be fully paid for now, but without specifying how. The payment decision requires a separate vote, before the program starts.

What is the greatest acceptable cost of the program, as a percent of total income taxes collected now?

0%    1%    2%    3%    4%    5%    6%    8%    10%    12%

Suppose that the law to increase funding for NEW CANCER DRUGS AND ANTIBIOTICS required that it would be fully paid for in ten years, but without specifying how. The payment decision requires a vote in ten years.

What is the greatest acceptable cost of the program, as a percent of total income

taxes collected now?

0%    1%    2%    3%    4%    5%    6%    8%    10%    12%

If the payment decision were made now what is your best guess about how the cost would be covered?

100% from taxes, 0% from cuts in other programs.

89% from taxes, 11% from cuts in other programs.

78% from taxes, 22% from cuts in other programs.

67% from taxes, 33% from cuts in other programs.

56% from taxes, 44% from cuts in other programs.

44% from taxes, 56% from cuts in other programs.

33% from taxes, 67% from cuts in other programs.

22% from taxes, 78% from cuts in other programs.

11% from taxes, 89% from cuts in other programs.

0% from taxes, 100% from cuts in other programs.

If the payment decision were made in ten years what is your best guess about how the cost would be covered?

[same options]

We call first two questions Pay and Pay10, respectively, and the two others Division and Division10. We used the division questions to predict WTP, this getting Predict and Predict10. For example,  $\text{Predict} = \text{Division} \cdot \text{Cut} + (1 - \text{Division}) \cdot \text{Tax}$ , where Division is expressed as a proportion and Tax and Cut are the respective WTPs.

The 18 items were presented in a random order chosen for each subject.

## 7.2 Results

The items differed, as before, in WTP, for all measures, but these differences did not interact with the measures (Tax, Tax10, Cut, Cut10, Pay, Pay10). Division and Division10 also did not differ across items. Subjects differed in everything. Thus, for all comparisons, we aggregate across items and test across subjects.

The means are shown in Table 2. Recall that Division is the proportion allocated to program cuts as opposed to tax increases.

	Tax	Cut	Pay	Predict	Division
Now	2.95	2.82	3.07	2.93	0.41
10 years	2.95	2.77	3.11	2.92	0.42

Table 2: Means of WTP measures (in percent of income taxes) for Experiment 5.

As in Experiment 4, Pay10 was not significantly different from Max10, the maximum of Cut10 and Tax10. However, we now had the same measures for current decisions, and we found that Pay was significantly less than Max (the maximum of Cut and Tax;  $t_{78} = -2.50$ ,  $p = 0.0146$ ).

More to the point, we have a better comparison. We can compare Pay10 and Pay to Predict10 and Predict, respectively. This is the inferred maximum cost of the program given the subjects' judgments of maximum cost for each of the two ways of paying for them. For the future, Pay10 was greater than Predict10 ( $t_{78} = 2.37$ ,  $p = 0.0205$ ). The same result was not found for the present (Pay vs. Predict:  $t_{78} = 1.61$ ,  $p = 0.1122$ ). However, the interaction between Pay vs. Predict and present vs. future was not significant, and the overall result combining present and future was significant ( $t_{78} = 2.22$ ,  $p = 0.0294$ ).

In sum, subjects show a clear optimism effect, in which the acceptable cost of a program is higher when they do not know how it will be paid for. When they are asked specifically about the acceptable cost under the two means of paying for it, and about how they think it will be paid for, the inferred acceptable cost is lower.

We asked whether subjects were optimistic about Division. Did they tend to think that payment would be made in the way they found more acceptable? To test this, we correlated Division with Cut–Tax, combining present and future (which did not differ), and the result showed a small correlation in this direction ( $r = .19$ ,  $p = .0472$ , one tailed).<sup>5</sup>

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<sup>5</sup>An unexpected but strong result was that this optimism effect was related to subjects' attitudes toward paying through taxes vs. cuts. Subjects who found taxes more acceptable than cuts showed the largest optimism effect. In particular, the correlation between Tax–Cut and Pay–Predict, for the present, was .42 ( $p = .0001$ , and the correlation was .32,  $p = .0044$ , for the future). We found no comparable result in Experiment 4.

Experiment 5 shows a consistent optimism effect, but it does not support the view that this effect is confined to the distant future. It seems to be enough to put off the decision about how to pay for something to a second vote.

## 8 Conclusions

Taxes and the use of tax systems to spend or effect other government policies affect redistribution and general prices. All taxes have multiple effects. These may or may not be known, may or may not be intended, and may occur in close or distant temporal proximity.

Our experiments presented here, most notably Experiment 1, show a consistent tendency to prefer hidden to transparent taxes, a form of *tax aversion* that we and others have found elsewhere (McCaffery & Baron, forthcoming b, Eckel, Grossman, & Johnston, 2004). We found (especially in Experiment 2) limited, imperfect knowledge of direct and, more so, indirect effects, with greater knowledge of such effects bringing about some reduction in support for tax policies. There is indeed an intentionality bias, seen most clearly in Experiment 3, with subjects responding to simple statements of the reasons behind policies, notwithstanding that real outcomes are unaffected by such statements of motive. And there is some sense of optimism, with subjects preferring to put off hard choices for a later day, as Experiments 4 and 5 reveal.

On all these matters, debiasing efforts produced small effects, albeit generally in the predicted direction, towards consistency with the subjects' own stated values.

All of this leaves us with a sense that the *isolation effect*, a kind of residual variable in our experiments, is doing a great deal of the work. We have found this bias — a tendency to view issues in cognitive isolation, even of clearly related matters — to have dramatic consequences in other settings, such as the inability to integrate attitudes about parallel tax systems to form a consistent whole (McCaffery & Baron, 2003), and the difficulty in aggregating taxing and spending policies to do likewise (Baron & McCaffery, forthcoming). Other factors are doing some of the work, to be sure, but ordinary people seem to have deep-seated tendencies to form quick judgments on matters of tax and economic policy,

responding to the most obviously salient aspect of a choice or decision set. Thus, in Experiment 1, an aversion to the income tax, *per se*, seems to over-ride a concern about helping the poor.

All this is hardly surprising, given the complexity of the subject matter, the unfamiliarity of evincing attitudes about tax and economic policy, and the general inefficacy of even having informed attitudes about such matters in the first place. And yet, given the stakes involved in government tax and spending programs, even and maybe especially our understandable habits of mind can cause considerable havoc — and real harm — in our social structures.

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