Rational Inattention to Subsidies for Charitable Contributions*

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ABSTRACT

Evidence suggests that individuals fail to process all relevant attributes when making decisions. Recent literature has mainly focused on shrouded attributes. Here we present a simple model where agents rationally choose not to process attributes even when they are not shrouded, and we investigate its predictions for the case of subsidies for charitable donations. These are offered as rebates or matches. Both lower the price of giving, but, crucially, with different implications for rational non-processing choices. Survey and experimental evidence on donation responses to equivalent changes in the match and the rebate is consistent with our model of rational inattention.

KEY WORDS: Tax salience, rational inattention, charitable giving

JEL CLASSIFICATION: H2, D0, D8

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1 Introduction

There is growing evidence from both the lab and the field to suggest that consumers do not process all the parameters relating to the choices they face.[1] Tax attributes, for example, may not always be salient in consumer decisions and individuals may not optimize with respect to tax-inclusive prices. A number of papers have considered the difference between 'visible' attributes, which are processed, and 'shrouded' ones,[2] which are not, exploring, among other things, how consumers respond to exogenous changes in the visibility of attributes (Brown *et al.*, 2008; Chetty *et al.*, 2009; Finkelstein, 2009). One aspect that has received less empirical attention is the possibility that the non-processing of attributes may be a deliberate choice. Attention is a scarce resource, and consumers may rationally choose to forgo processing of attributes – even if they are fully visible – if processing entails sufficiently high costs compared to the benefits of processing and responding. This 'rational inattention' interpretation of the non-processing of attributes is the focus of this paper.

We look at rational inattention in the context of tax subsidies for private donations, which are present in the majority of developed countries. Most governments that offer tax subsidies do so in the form of a tax rebate – either deductions from taxable income or tax credits granted at the marginal rate of income tax; some countries, such as the UK, also offer a match-style element, i.e. charities can claim tax relief on donations at an income-tax equivalent rate. Both rebate and match incentives lower the price of giving and are designed to encourage giving; but they work in crucially different ways, in particular with respect to the implications of non-processing. To see this, define d as the nominal donation which the donor chooses, g as the match-inclusive contribution to the charity, and c as the net cost to the donor, and define m as the rate at which the nominal donation is matched by the government and r as the rebate rate; i.e. $g = (1+m)d$; $c = (1-r)d$. If con-

[1] DellaVigna (2009) provides an overview and analysis of existing literature.

[2] Gabaix and Laibson (2006) define a shrouded attribute as one that is hidden even though it could be nearly costlessly revealed.

sumers do not process a change in the match and do not change their nominal donation in response, then the match-inclusive contribution received by the charity automatically adjusts. If consumers choose not to process a change in the rebate, on the other hand, and do not change their nominal donation, there is no effect on the match-inclusive contribution received by the charity; rather the net cost to the contributor adjusts. If donors value the activities that are funded with their contributions, as in standard models of giving,[3] there are therefore different costs of inattention for the two types of subsidy. We exploit this asymmetry in non-processing costs – which is peculiar to contribution subsidies – to assess the extent to which non-processing behavior is consistent with a model of rational inattention.

Recent experimental evidence has shown that offering donors a match has a bigger effect on contribution levels than offering a rebate of equivalent value (Eckel and Grossman, 2003, 2008; Davis *et al.*, 2005). This finding is inconsistent with a standard model of giving in which consumers care about contributions. The difference persists when donors are given information on the relationship between their nominal donation, the total contribution to the charity and the net cost, suggesting that the difference cannot simply be attributed to confusion on the part of donors. Eckel and Grossman attribute the difference to preferences: following Bénabou and Tirole, 2006, they argue that the match induces greater giving because it is associated with a 'cooperation frame', while the rebate is associated with a 'reward frame'. However, rationalizing such differences as arising from framing effects relating to differential warm-glow effects is potentially problematic. Davis *et al.* (2005) argue instead that, faced with a complex set of incentives, donors ignore both match and rebate and focus only on the nominal donation. They refer to this as an 'isolation' effect.

The model of rational inattention we present here provides an alternative explanation for the differential effect of match and rebate subsidies. Although our rational inattention-based interpretation of non-processing is superficially related to that of Davis *et al.* (2005),

[3] In such models, donors are assumed to care about total contributions to the public good and/or derive an additional warm glow from their own contribution, for example Roberts, 1987, Andreoni, 1990.

non-processing of match and rebate changes in our model is the result of a rational *ex-ante* choice, which involves an *ex-ante* assessment of processing costs and benefits that depends on individual preferences for private consumption and charity provision. Accordingly, donors may deliberately choose to – or not to – process match and rebate in different situations, which is what is observed in practice.

We present empirical evidence that is consistent with this interpretation. In particular, we show that the majority of donors do not adjust their nominal donation (an indicator for processing the subsidy change) in line with a change in either the match or the rebate, but also that the probability of adjusting differs between match and rebate as we would expect on the basis of the different implications for non-processing costs for the two types of subsidy; and that, consistently with rational inattention, it is higher when the donation is larger, and is higher for greater price changes.

Our main evidence comes from our own survey of UK taxpayers who were asked how they would respond to (hypothetical) changes in match and rebate tax subsidies. The UK case is ideal for exploring donor responses to the two subsidy types, because, as already highlighted, the main scheme through which private donors get tax relief on their donations (known as Gift Aid) has both a match and a rebate element. We can therefore directly explore donor responses to different types of fiscal subsidies. Stated choice is not a common approach in policy evaluation (although for a recent example see Krueger and Kuziemko, 2011); we discuss our survey methods and related limitations in detail in Section 3. We also present further analysis of the data from the original lab experiment carried out by Eckel and Grossman (2003) to confirm that the main findings from our survey are not a result of hypothetical bias or survey design.

The rest of the paper is organized as follows. The next section presents our model of rational inattention, drawing out the main predictions for how donors are likely to respond to changes in match and rebate incentives. Section 3 describes our survey and discusses the stated choice approach. Section 4 presents the main results from our survey and section 5 presents additional supporting evidence using data from the original Eckel and Grossman lab experiment. Section 6 concludes.

2 Rational inattention

Rational inattention embodies the idea that consumers may deliberately choose not to process some potentially relevant attributes in making their decisions if doing so is costly. This conjecture is related both to the concept of 'limited rationality' characterized by Lipman (1991) and to the idea of 'rational inattention' that has been invoked in the macroeconomics literature on price stickiness (Sims, 2006). In this section we present a simple formalization of rational inattention in the context of charitable giving.

As in standard, non-cooperative models of giving, we assume that donors care about their contributions, although to simplify we abstract from the public good dimension.

$$U\big(x(i,t), g(i,t)\big) = U\Big(y(i) - \big(1 - r(t)\big)d(i,t),\ \big(1 + m(t)\big)d(i,t)\Big), \tag{1}$$

where $d(i,t)$ is i's nominal donation at time t – the amount the donor writes on the check, corresponding to the action the donor *directly* takes – $r(t) \in \mathcal{R}$ is the rebate rate at time t, and $m(t) \in \mathcal{M}$ is the match rate at time t. The net donation (the cost of the donation to the donor) is $c(i,t) = (1 - r(t))d(i,t)$, and the individual's total contribution – the second argument in U – is $g(i,t) = (1 + m(t))d(i,t) = c(i,t)/p(t)$, where $p(t) = (1 - r(t))/(1 + m(t))$ is the price of giving.

Suppose that, prior to making choices in period t, the individual has well defined beliefs about the probability of different possible values of match and rebate at t, i.e. $\Pr\big(r(t) = r\big) \equiv \pi(r), r \in \mathcal{R}$, and $\Pr\big(m(t) = m\big) \equiv \pi(m), m \in \mathcal{M}$. Also assume that there is no further donation choice to be made after period t or, equivalently, that observing $m(t)$ and $r(t)$ conveys no information about the distribution of possible values $(m(t), r(t))$ at $t + 1$.[4]

Following a given realization of match and rebate rates at time t, the individual can

[4]Our arguments could be extended to a dynamic choice framework where m_t and r_t do convey information about future realizations of match and rebate, and where, therefore, individuals use any current observation to update their beliefs. To be tractable, such an extension would require making simplifying assumptions about the form of the mechanism generating $m(t)$ and $r(t)$ – e.g. that $m(t)$ and $r(t)$ follow a Markov process.

observe these rates and can process the information by incorporating it into an *ex-post* optimal choice. Doing this involves, for each of value of the match and rebate, a non-monetary cost $K(i)$.[5] Alternatively, prior to making choices at t, the individual can decide not to process the match, the rebate, or both, and save the associated cost; in this case, she will be unable to condition her choice of $d(i,t)$ on the realization of the tax relief parameters, and she will instead have to choose a single value $d(i,t)$ that is optimal 'on average' given her beliefs over possible realizations. To choose to do so rationally, however, the individual must come to an *ex-ante* assessment that also incorporates the values of the possible realizations of the tax relief parameters, which implies that the processing must take place even in that case, albeit prospectively, and that a processing cost, K_0, must be incurred even then. Nevertheless, if the processing that is performed *ex ante* does not exonerate the individual from having to process the information again to arrive at an *ex-post* optimal choice after observing a certain realization, then forgoing to process information *ex post* will involve a lower overall processing cost. This seems plausible if the cost is thought of as both a pure processing cost and also an adjustment cost.

Let the choice of whether or not to process the match and the rebate be respectively represented by $\sigma^m(i,t) \in \{0,1\}$ and $\sigma^r(i,t) \in \{0,1\}$, where 0 denotes inattention and 1 denotes attention. Omitting t indices, we then have four possibilities, each yielding different expected payoffs:

(i) The individual processes both match and rebate; the associated payoff is

$$\begin{aligned} & E_m E_r \Big[\max_d U\big(Y - d(1-r), d(1+m)\big) \Big] - K_0 - 2K \\ & \qquad \equiv \Gamma(\sigma^m = 1, \sigma^r = 1) - K_0 - 2K, \end{aligned} \tag{2}$$

where $E[.]$ is the expectation operator – incorporating the individual's subjective

[5] Sims (2006) characterizes rational inattention in terms of constraints on processing capacity, which means that the cost of processing a piece of information is an opportunity cost, defined by alternative uses of such capacity. In our context, the simpler characterization we adopt is sufficient for our purposes. The processing cost may be thought of as incorporating the cost of both working out the *ex-post* optimal amount and adjusting the nominal donation accordingly.

beliefs.

(ii) The individual processes the match but not the rebate; the associated payoff is

$$E_m\Big[\max_d E_r\big[U\big(Y-d(1-r),d(1+m)\big)\big]\Big]-K_0-K$$
$$\equiv \Gamma(\sigma^m=1,\sigma^r=0)-K_0-K, \tag{3}$$

where the expression within the outer expectation operator is the indirect utility obtainable by selecting d optimally after processing m but not r.

(iii) The individual processes the rebate but not the match; the associated payoff is

$$E_r\Big[\max_d E_m\big[U\big(Y-d(1-r),d(1+m)\big)\big]\Big]-K_0-K$$
$$\equiv \Gamma(\sigma^m=0,\sigma^r=1)-K_0-K, \tag{4}$$

where the expression within the outer expectation operator is the indirect utility obtainable by selecting d optimally after processing r but not m.

(iv) The individual processes neither match nor rebate; the associated payoff is

$$\max_d E_m E_r\Big[U\big(Y-d(1-r),d(1+m)\big)\Big]-K_0$$
$$\equiv \Gamma(\sigma^m=0,\sigma^r=0)-K_0. \tag{5}$$

Choosing amongst the above four possible configurations, the individual will then rationally select the processing strategy (σ^m,σ^r) that results in the highest expected payoff.

In order to derive predictions that can be directly related to our survey evidence on treatment responses, let utility for donor i at time t take the quasilinear, constant-elasticity form

$$U\big(x(i),g(i)\big)=x(i)+\phi(i)^{-1/\eta(i)}\frac{\eta(i)}{1+\eta(i)}g(i)^{(1+\eta(i))/\eta(i)}$$
$$=y-d(i)(1-r)+\phi(i)^{-1/\eta(i)}\frac{\eta(i)}{1+\eta(i)}\Big(d(i)(1+m)\Big)^{(1+\eta(i))/\eta(i)}, \tag{6}$$

where $\eta(i)<0$ corresponds to the (unobservable) price elasticity of giving under full attention (i.e. under zero processing costs).

Suppose the status quo position is with match m_0 and rebate r_0, implying a price of giving of $p_0 = (1 - r_0)/(1 + m_0)$. Now suppose that the donor believes that with probability $2\pi(i)$ ($\pi < 1/2$) the price of giving changes to p_1 and that with probability $\pi(i)$ this change occurs as a result of a change in the match from m_0 to $m_1 = (1 + m_0)(p_0/p_1) - 1$ (with the rebate remaining unchanged at r_0), and with probability $\pi(i)$ the price change occurs as a result of a change in the rebate from r_0 to $r_1 = 1 - (1 - r_0)(p_1/p_0)$ (with the match remaining unchanged at m_0). The probability of both the match and the rebate changing is thus zero.[6]

The optimal donation choices for this specification under different processing strategies are detailed in Appendix A1, which also derives results concerning the relationship between parameter choices and optimal processing choices. These can be best summarized and understood by referring to specific elasticity scenarios. Consider first the case where the price elasticity of giving under full attention, $\eta(i)$, is -1; then nominal donations will never adjust to changes in the match, and therefore no 'mistake' is made by not processing the match. In this case, we would expect the match to never be processed (as it is irrelevant for the determination of the size of the optimal nominal donation), and the rebate to be more likely to be processed by large donors than by small donors as not paying attention to the rebate becomes more costly for larger donations.

Suppose that instead the price elasticity of giving under full attention is 0; then nominal donations never need to adjust to changes in the rebate. In this case, we would expect the rebate never to be processed, and the match to be more likely to be processed by large donors than by small donors. For elasticity values between 0 and -1, nominal donations need to adjust downwards for increases in the match and upwards for increases in the rebate, and whether the match or the rebate will be more likely to be processed depends upon how close the elasticity is to either extreme. On the other hand, for elasticity values greater than unity in absolute value, the adjustment is upwards for increases in both match and rebate, but the required adjustments in nominal donations for equivalent

[6]Our analysis and conclusions readily extend to the case where individuals attach different probabilities to changes in the match and rebate.

changes in the match and rebate is greater for the rebate than it is for the match, implying that in that case donors should be more likely to process the rebate than the match, and no donors should choose to process the match and not the rebate.

As the inattention cost is directly proportional to ϕ (which is also directly proportional to donation size), an increase in K has the same effect on processing choices as in increase in $1/\phi$ – i.e., given all other parameter values, processing choices depend on the ratio $\rho = K/\phi$.

The relationship between parameters and processing choices is detailed more fully in Figure 1, which depicts regions in (ρ, η) space that each correspond to a different processing behavior; these were derived from an explicit computation of optimal processing choices for different parameter configurations, for a given value of π, and for $p_0 = 1$ and $p_1 = 3/4$. For the given values of π, p_0, p_1, these fully identify processing choices in the constant elasticity case. Figure 1 refers to a scenario with $\pi = 1/6$. The region labeled as N represents parameter configurations for which neither match nor rebate are processed – which occurs for low levels of donations (relative to processing costs) and/or for elasticity values that are close to unity in absolute value. The region labeled as R represents parameter configurations for which only the rebate is processed – this occurs for comparatively larger donations (relative to processing costs), and for elasticity values that are greater than $1/2$ in absolute value. When the elasticity parameter is less than $1/2$ in absolute value, then it is possible for only the match to be processed – region M in the figure. In the region labeled as B, both match and rebate are processed. Finally, when η is close to one in absolute value, variations in η have little effect on processing choices, and specifically on the choice of whether to process both match and rebate or rebate only (the boundary between regions B and R becomes vertical in the neighborhood of $|\eta| = 1$).

From the model, choices consistent with rational inattention should then exhibit the following patterns:

(a) The choice to adjust nominal donations following changes in the match or the rebate should be (weakly) positively correlated with the size of nominal donations;

(b) The choice to adjust nominal donations following changes in the match or the rebate

should be (weakly) positively correlated with the size of the implied price change;

(c) If contributions are sufficiently price-elastic, more individuals will adjust their nominal donations to changes in the rebate than to changes in the match, and individuals who are adjusters when the match changes are also adjusters when the rebate changes;

(d) Responses will be comparatively more consistent (in terms of implied price elasticities) across match and rebate for adjusters than for non-adjusters.

The rest of the paper explores whether these patterns are observed in practice.

3 Survey evidence: the UK Gift Aid scheme

We use a survey-based approach to explore how UK donors respond to changes in match and rebate fiscal incentives. As already noted, the UK makes for an ideal case study because the main UK scheme for tax relief on giving, known as Gift Aid, embodies both subsidy types.[7] Gift Aid works in the following way: individuals donate to charity out of their net-of-tax income; the charity can then reclaim tax relief on donations made by taxpayers at the basic rate of tax, currently 20 percent, which means that for every £1 donated to charity, the charity can reclaim 25 pence. This can be thought of as a match on donations made by taxpayers. In addition, higher-rate taxpayers can reclaim a rebate equal to the difference between the higher rate of tax at 40 percent and the basic rate of tax at 20 percent on the 'gross' equivalent donation, i.e. the amount before basic rate tax was deducted. This means that for every £1 donated out of net income, a higher-rate taxpayer can get an additional rebate of 25 pence. Note that in order for higher-rate taxpayers to receive the additional rebate, they need to make a claim through a self-assessment tax return (completed by approximately one third of all UK taxpayers) or ask for a change

[7] Other schemes include a payroll-giving scheme that allows donors to give to charity out of their gross earnings, gifts of shares and property and charitable bequests. Gift Aid accounts for more than £4 billion in 2009-10 out of estimated total donations of around £10 billion.

in their tax code via a simpler tax review form. Either way, there is an additional administrative cost for donors on the rebate element compared to the match element. In practice, not all higher-rate taxpayers reclaim the additional rebate (as expected, reclaiming is more common among those donating larger amounts). In principle, non-reclaiming could account for the differential response to different incentives, but we show below that there is also a difference among those who reclaim.

Invitations to take part in an on-line survey were e-mailed to 40,000 UK-based donors, split equally between those with a Charities Aid Foundation (CAF) charity account and those who had donated on-line through Justgiving (an on-line giving portal) during the previous six months.[8] A total of 3,445 respondents were presented with a number of hypothetical scenarios involving changes to either the match and/or the rebate element of Gift Aid and asked to state how their donations would respond. We focus our analysis on 1,422 responses from higher-rate taxpayers.

Stated choice approaches are not commonly used in policy evaluation (although for a recent example, see Krueger and Kuziemko, 2011). The existing evidence on differential responses to match and rebate incentives comes from lab experiments and single-charity field experiments. Eckel and Grossman (2003) conducted a laboratory experiment involving 181 undergraduate students each given twelve allocation problems varying in the initial endowment and match and rebate rates. In the experiment, match rates resulted in gross donations that were 1.2 to 2 times greater than the equivalent-value rebate. The estimated elasticity of gross donations with respect to the price was -1.14 compared a rebate elasticity of $-.36$. Similar results were obtained from a field experiment (Eckel and Grossman, 2008). Based on approximately 7,000 responses to a mail-out on behalf of Minnesota Public Radio, offering match rates resulted in a higher level of gross donations

[8]CAF is a charity that, among a range of services for individuals and charities, provides a charity account to donors to facilitate tax-efficient giving. Justgiving is an on-line giving portal that processes donations from individuals direct to charity and individual sponsorships of charity fundraisers. While this represents a convenience sample, further analysis shows that the results are robust to re-weighting in line with population. See Scharf and Smith, 2009, for further discussion.

than equivalent-value rebates. The estimated elasticity of gross donations was -1.05 in the case of the match rate and $-.11$ in the case of the rebate rate.

The experimental design of these earlier studies provides credible internal validity, but there are potential concerns about the external validity of the results, i.e. generalizing from single-charity field experiments or lab experiments to changes in broad-based tax relief. One strength of our survey for policy purposes is that it focuses on a sample from the relevant group, i.e. taxpayers, and asks about their response to the relevant instrument, i.e. tax incentives. However, there may be concerns about hypothetical bias in our survey-based approach.[9] We make the following claims in support of the robustness of our findings. First, we made the scenarios more realistic by asking respondents to consider how the alternative tax treatments would affect a specific donation that they had previously in the survey said that they were likely to make in the next six months rather than asking generally how they would respond to a change in tax incentives. Second, we identify the differential effects of the match and rebate from within-person variation. In a recent paper, Johansson-Stenman and Svedsäter (2008) show in relation to contingent valuation studies that this is more robust than cross-person identification, arguing that people strive for consistency in their statements. Finally, the survey responses satisfy a number of internal consistency checks – for example, we deliberately included the same treatment twice but in a different order to rule out so-called 'embedding effects', the phenomenon whereby the responses depend on the way, and the order, in which questions are presented (see Diamond and Hausman, 1994). These tests are discussed in Scharf and Smith, 2009.

The overall design of our study was broadly consistent with the lab experiments men-

[9]Our study differs from a classic WTP study where, according to Harrison and Ruström '... as a matter of logic, if you do not have to pay for the good but a higher verbal willingness to pay (WTP) response increases the chance of its provision, then verbalize away to increase your expected utility!' In our case, it is not clear *ex ante* whether donors would over-state since they are directly informed in the survey about tax changes and incur no real adjustment costs, or under-state since a no-adjustment response is the easiest answer to give.

tioned above; survey respondents were randomly allocated across five treatments each of which offered two different levels of match and/or rebate subsidy. The main difference with previous studies is that the treatments consisted of hypothetical scenarios. The design and description of the scenarios reflected the way Gift Aid is portrayed to donors – i.e. donors were told that the charity would receive x pence for every £1 given out of net-of-tax income (referred to as the nominal donation) and the individual could reclaim x pence for every £1 given out of net-of-tax income. Appendix A2 provides further information on how the hypothetical scenarios appeared in the on-line survey. Note that the specific terms, 'match' and 'rebate' were not used in the survey because they are not used in relation to the Gift Aid scheme in practice.

Two (out of the five) treatment sets involved changes in either the match or rebate. The changes were symmetrical in terms of pence change for each £1 donated but not in terms of price changes.[10] For example, in set A, individuals were faced with the following two scenarios:

A.1 A match of 30 pence and a rebate of 25 pence (price of giving = .577);

A.2 A match of 25 pence and a rebate of 30 pence (price of giving = .560);

while in set B, individuals were faced with the following two scenarios:

B.1 A match of 20 pence and a rebate of 25 pence (price of giving = .625);

B.2 A match of 25 pence and a rebate of 20 pence (price of giving = .640).

4 Responses to match and rebate: survey evidence

Using data from our survey, we estimate contribution elasticities with respect to changes in the match and rebate. Although we are mainly concerned here with the choice of whether or not to process a match or rebate change – rather than with the magnitude of

[10] This is in contrast to Eckel and Grossman (2003, 2008) who defined match and rebate pairs that were equivalent in value but were not symmetrical in terms of rates.

responses if processing occurs – elasticity measures provide a useful measure for assessing our survey evidence against comparable evidence from earlier experimental studies.

We focus on responses from higher-rate taxpayers and on the set of four scenarios A.1, A.2, B.1 and B.2. We run regressions of the following form:

$$\ln g_{in} = \alpha + \beta_r \ln(1 - r_s) + \beta_m(1 + m_s) + v_{in}, \tag{7}$$

where g_{in} is the n-th contribution of individual donor i. For each donor, we have up to three donation amounts – their initial donation, g_{i0}, and donations under the two alternative scenarios in their treatment. β_m and β_r capture the measured elasticity of contributions with respect to the match and rebate, respectively, where variation in the match and rebate comes from the different scenarios described above. $v_{in} = \gamma_i + u_{in}$ includes a fixed, individual-specific term, γ_i, which captures the effects of observed and unobserved donor characteristics on donations, as well as a zero-mean, IID error term.[11] We estimate this equation using a random-effects model.[12]

Our basic regression results are reported in Table 1, panel (a). As before, we find that contributions are more elastic with respect to changes in the match than to changes in the rebate. The magnitudes of the estimated elasticities, -1.13 in the case of the match and -0.21 in the case of the rebate, are very similar to those from Eckel and Grossman's experimental studies, ranging from -1.14 to -1.05 for the match and from $-.36$ to $-.11$ for the rebate.

Table 1 reports the proportions of respondents who say that they would change their nominal donation in response to a change in the match/rebate. These proportions are fairly low – only 8 percent for the match and 18 percent for the rebate; this low level

[11] This specification formally corresponds to a model where choices are made under full attention, albeit differently for match and rebate. Accordingly, if observed choices involve rational inattention, the elasticity estimates thus obtained do not measure the true elasticity, $\eta(i)$. They are, however, directly comparable with estimates from the Eckel and Grossman study – which is the main objective of our estimation exercise.

[12] This yields efficient and unbiased estimates if the rebate and match terms are unrelated to individuals' characteristics. Since the rebate and match terms are randomly allocated to individuals this should be true by assumption. Estimating a fixed-effects model yields very similar results.

of adjustment can (mechanically) explain much of the difference in elasticities between match and rebate because of the different implications of non-response for contributions in the case of the two types of incentive. Panel (b) reports elasticity estimates for the group who do adjust their nominal donations. Consistently with a model of rational inattention (point (d), end of Section 2), these are much more similar across match and rebate – and indeed we can no longer reject that they are statistically significantly different at the 5 percent level.

High levels of non-adjustment are consistent with our model of rational inattention in the presence of high processing costs (types in region N of Figure 1), but could also be explained by an isolation effect (i.e. donors simply ignore changes to taxes and focus on the nominal donation). However, the fact that donors are more likely to adjust when the rebate changes than when the match changes is harder to reconcile with a simple isolation effect, or indeed with an explanation that donors are responding to the cooperation frame in the match. Also consistent with the predictions of a model of rational inattention (point (a), end of the Section 2), it is the case that donors making larger donations are more likely to adjust. This is shown clearly in Figure 2.[13]

Table 2 gives a breakdown of adjustment numbers by type of subsidy change. More individuals respond to changes in the rebate than to changes in the match, and most of

[13] An analogous finding is reported by Scholnick *et al.* (2008) with reference to credit card repayments. Note that this interpretation requires that the processing cost must not be perfectly (positively) correlated with the size of the donation. While in our quasi-linear specification processing costs, K, are exogenous and specified independently of ϕ, one could imagine that they could be endogenously related to donation size in a more general specification. Suppose for example that processing only requires time, and that individuals have identical preferences but differ with the respect to the market value of their time (i.e. their wage); then, if giving is a normal good, higher-productivity individuals would donate more and would also face higher processing costs – implying that we should expect a strong positive correlation between donation size and processing costs and thus significant clustering around specific processing choices, independently of donation size. Even in such a scenario, however, a positive correlation between donation size and processing choices could arise if some of the processing costs are not related to time inputs, or if income is not perfectly correlated to the market value of time (e.g. in the case of individuals who are retired).

those who respond to a change in the match also respond to a change in the rebate. As noted at the end of the previous section (point (c)), these patterns are consistent with a scenario where the 'true' elasticity is greater than unity in absolute value for most donors, and where some donors are of types that lie in region R of Figure 1 – corresponding to comparatively lower elasticity values – and others are of types lying in region B – corresponding to comparatively higher elasticity values and thus exhibiting larger responses. These patterns also go against a scenario where the 'true' elasticity is close to zero – as the proportion of donors only adjusting to changes in the match and not to changes in the rebate is very small. Consistently with this intepretation, the measured elasticities for adjusters (panel (b) of Table 1) are in excess of unity.

We can reject that the differences in responses between match and rebate are attributable to any higher administrative costs associated with reclaiming the rebate. Table 1, panel (c) looks only at those who are already reclaiming the rebate. The estimated elasticities (and the proportions adjusting) are higher than when the non-reclaimers are also included, but there are still significant differences in responses across the two types of incentive.

We also explore another possible explanation for the differential responses, that people don't really understand the two types of incentives – and/or understand them differently. Panel (d) analyzes the responses for a group of donors who are likely to have a fairly good level of understanding. This is assessed on the basis of individuals' response to a question about how much the match is worth to charities. Respondents are told that the charity can reclaim basic-rate tax and asked to say how much the charity gets for each £1 donated out of net-of-tax income (choosing one out of a set of possible responses). If they respond correctly, we define them as having a good level of understanding. The results show that the match elasticity is higher and the proportion responding to a change in the rebate is higher among those with a good level of understanding.

5 Responses to match and rebate: experimental evidence

The survey evidence in the previous section is consistent with our model of rational inattention. We have shown that a large proportion of respondents do not appear to process subsidy changes, but also that a higher proportion adjust in response to a rebate change than to a match change, and that respondents are more likely to report adjustment when they give more. There is a potential concern that these findings may be affected by hypothetical bias because of the stated choice approach. There is also a concern that comparing responses to match and rebate changes that are symmetrical in terms of their rate value may be inappropriate as these produce asymmetrical price changes. To address these concerns, in this section we provide some additional support for our model's prediction using the original data from Eckel and Grossman's lab experiment.

Eckel and Grossman had 168 subjects each of whom faced twelve different allocation problems with varying match incentives (25 percent, 33 percent and 100 percent), rebate incentives (20 percent, 25 percent and 50 percent) and endowment sizes (40, 60, 75 and 100). In practice, we ignore the 100 endowment treatment since there was no variation in match and rebate rates associated with this option. We also focus on sequential treatment pairs where there is a change in either the match or rebate rate, as opposed to a change from a match to a rebate (or *vice versa*) or only a change in the endowment. Our analysis therefore concentrates on 920 observations.

In the context of Eckel and Grossman's experiment, we define non-adjusters as individuals adopting the same pass through rate (i.e. the same amount donated as a percentage of endowment) from one treatment to the next when either the match or the rebate has changed. We find that the proportion of adjusters is higher in the lab experiment than in our survey: 77 percent of individuals adjust the proportion of their endowment that they donate from one treatment to the next in response to a change in the match or rebate. In general, however, the patterns of adjustment are consistent with our model of rational inattention.

To explore this we ran a number of simple (random effects) regressions of a binary indicator for whether the donor adjusts their pass through rate as a function of various

aspects of the treatment. The main results are summarized in Table 3. The first finding is that, in line with our survey evidence, donors are more likely to adjust the pass through rate in response to a change in the rebate than to a change in the match. This is shown in columns (1)-(3). Secondly, we find that donors are more likely to adjust the pass through rate when the size of the endowment is greater, shown in columns (2)-(4). Finally, we find that the probability of adjustment depends positively on the absolute magnitude of the price change in the case of a rebate change. There is more variation in match and rebate rates in the lab experiment than in our survey, and we exploit this to look at the extent to which adjustment depends on the (absolute) magnitude of the price change. On its own, the size of the price change has no significant effect on the probability of adjustment (column (3)), but when we interact this with a binary indicator of change in the rebate, the size of the price change is positive and significant. In other words, as predicted by a model of rational inattention (under point (b), end of Section 2), the probability of adjustment is increasing in the size of the price change only if this stems from a change in the rebate.

6 Summary and conclusion

This paper has presented a model of rational inattention that can explain an existing puzzle in the charitable giving literature – the finding that match incentives have a greater effect on charitable contributions than equivalent value rebate incentives. We have provided supporting evidence both from a survey of UK taxpayers and from the lab, showing that donors are more likely to process rebate changes than match changes, and are more likely to respond when they give more and to greater changes in price. This adds to the growing empirical literature showing that consumers may not process all the attributes that are potentially relevant in making consumption decisions. Evidence on processing choices with respect to a single type of instrument, as used in other studies of tax salience, cannot uncover the specific patterns predicted by a model of rational inattention. By comparing responses to different but price-equivalent instruments, we find support for the conclusion that, at least in the case of subsidies to private donations, non-processing of tax attributes can be accounted for by rational inattention.

Our findings have implications for policy design. Our survey results provide further evidence that match-style incentives are more effective than rebate-style incentives at increasing total contributions received by charities. In relation to tax subsidies for individual donations, rational inattention has implications for the effectiveness of different types of tax incentive. More generally, our findings suggest that policy-makers may think about affecting outcomes by manipulating processing costs as well as through standard price incentives. There is a current debate about the use of default options such as auto-enrolment. In this case the choice of match-style incentives may be seen as an appropriate default option if giving is reasonably price sensitive but there are costs that mean that consumers do not process all subsidy changes.

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Appendix A1 Rational inattention in giving

Case I – Full attention ($\sigma^m = 1; \sigma^r = 1$) Under full attention, the optimal nominal donation in each realization is identified by (omitting the i identifier)

$$d^f(m,r) = \phi p^\eta / (1+m), \tag{8}$$

where $p = (1-r)/(1+m)$. The payoff in each realization is

$$v^f(m,r) \equiv 1 - d^f(m,r)(1-r) + \phi^{-1/\eta} \frac{\eta}{1+\eta} \left(d^f(m,r)(1+m)\right)^{(1+\eta)/\eta}, \tag{9}$$

with $v^f(m_1, r_0) = v^f(m_0, r_1)$. The expected payoff under full attention, gross of processing costs, is then

$$\Gamma(\sigma^m = 1, \sigma^r = 1) = (1-2\pi) v^f(m_0, r_0) + 2\pi\, v^f(m_1, r_0) \equiv \Upsilon^B. \tag{10}$$

Case II – Attention to the rebate only ($\sigma^m = 0; \sigma^r = 1$) If the individual chooses to process the rebate but not the match, then donation choices must be separately derived for each of the two possible realizations the rebate, (i) $r = r_1$, and (ii) $r = r_0$ – which are fully observed and processed – on the basis of the expected payoff associated with a given choice under each possible rebate realization.

(i) If r_1 is observed and processed, then the nominal donation will be the same as that under full attention when the price of giving is p_1. This is because, conditional on the change in the rebate having occurred, the match is m_0 with probability one[14], i.e.

$$d^r(r_1) = d^f(m_0, r_1). \tag{11}$$

In this case, which occurs with probability π, the donor's payoff will be

$$v^r(r_1) = v^f(m_0, r_1). \tag{12}$$

(ii) If r_0 is observed, then m_1 will occur with probability $\xi = \pi/(1-\pi)$[15], and so the *ex-ante* optimal interior choice of nominal donation is characterized by the first-order condition

$$\phi^{-1/\eta} d^{1/\eta} \left(\xi(1+m_1)^{(1+\eta)/\eta} + (1-\xi)(1+m_0)^{(1+\eta)/\eta}\right) = 1 - r_0. \tag{13}$$

Substituting $m_1 = (1+m_0)(p_0/p_1) - 1$ into the above, we can rewrite expression (13) as

$$\phi^{-1/\eta} d^{1/\eta} (1+m_0)^{(1+\eta)/\eta} \left(1 - \xi + \xi(p_0/p_1)^{(1+\eta)/\eta}\right) = 1 - r_0. \tag{14}$$

Solving for d then yields

$$d^r(r_0) = \phi \frac{(p_0)^\eta}{1+m_0} \left(\frac{1}{1 - \xi + \xi(p_1/p_0)^{-(1+\eta)/\eta}}\right)^\eta. \tag{15}$$

Note that for $\eta = -1$ this coincides with the choice under full attention to the match, i.e., $d^r(r_0) = d^f(r_0, m_0) = d^f(r_0, m_1)$, and so no "mistake" is made by not processing the match. This choice results in an expected payoff of

$$\begin{aligned} &v^r(r_0) \equiv 1 - d^r(r_0)(1 - r_0) + \\ &\phi^{-1/\eta} \frac{\eta}{1+\eta} d^r(r_0)^{(1+\eta)/\eta} (1+m_0)^{(1+\eta)/\eta} \left(1 - \xi + \xi(p_0/p_1)^{(1+\eta)/\eta}\right), \end{aligned} \tag{16}$$

which occurs with probability $1 - \pi$.

Combining the results obtained under (i) and (ii) above, the overall level of expected utility under full attention to the rebate only, gross of processing costs, is

$$\Gamma(\sigma^m = 0, \sigma^r = 1) = \pi v^r(r_1) + (1-\pi) v^r(r_0) \equiv \Upsilon^R. \tag{17}$$

Case III – Attention to the match only ($\sigma^m = 1; \sigma^r = 0$) If the individual chooses to process the match but not the rebate, then donation choices must be separately derived for each of the two possible realizations of the match, (i) $m = m_1$, and (ii) $m = m_0$ – which are fully observed and processed – on the basis of the expected payoff associated with a given choice under each possible match realization.

[14] The probability of m_0 occurring conditional on the realization r_1 is $\Pr\{m_0|r_1\} = \Pr\{m_0 \cap r_1\} / \Pr\{r_1\} = (1-\pi)/(1-\pi) = 1$.

[15] $\Pr\{m_1|r_0\} = \Pr\{m_1 \cap r_0\} / \Pr\{r_0\} = \pi/(1-\pi)$.

(i) The result is the same as that in Case II(i) above. That is, if m_1 is observed and processed then the nominal donation will be the same as that under full attention when the price of giving is p_1. This is because, conditional on the change in the match having occurred, the rebate is r_0 with probability one[16], i.e.

$$d^m(m_1) = d^f(m_1, r_0) = d^f(m_0, r_1). \tag{18}$$

In this case, which occurs with probability π, the donor's payoff will be

$$v^m(m_1) = v^f(m_0, r_1). \tag{19}$$

(ii) If m_0 is observed, then r_1 will occur with probability $\xi = \pi/(1-\pi)$[17], and so the *ex-ante* optimal interior choice of nominal donation is characterized by the first-order condition

$$\phi^{-1/\eta} d^{1/\eta} (1+m_0)^{(1+\eta)/\eta} = \xi(1-r_1) + (1-\xi)(1-r_0). \tag{20}$$

Substituting $r_1 = 1 - (1-r_0)(p_1/p_0)$ into the above and solving for the *ex-ante* optimal choice of nominal donation, $d^m(m_0)$, yields

$$d^m(m_0) = \phi \frac{(p_0)^\eta}{1+m_0} \big(1 - \xi + \xi(p_1/p_0)\big)^\eta. \tag{21}$$

Note that with $\eta = 0$ this coincides with the choice under full attention to the rebate, i.e., $d^m(m_0) = d^f(r_0, m_0) = d^f(r_1, m_0)$, and so no "mistake" is made by not processing the rebate. This choice results in an expected payoff

$$\begin{aligned} v^m(m_0) &\equiv 1 - d^m(m_0)(1-r_0)\big(1 - \xi + \xi(p_1/p_0)\big) \\ &+ \phi^{-1/\eta} \, \frac{\eta}{1+\eta} \, d^m(m_0)^{(1+\eta)/\eta} (1+m_0)^{(1+\eta)/\eta}. \end{aligned} \tag{22}$$

Combining the results obtained under (i) and (ii) above, the overall level of expected utility under full attention to the match only, gross of processing costs, is

$$\Gamma(\sigma^m = 1, \sigma^r = 0) = \pi v^m(m_1) + (1-\pi) v^m(m_0) \equiv \mathrm{Y}^M. \tag{23}$$

Case IV – No attention ($\sigma^m = 0; \sigma^r = 0$) Proceeding as for the other cases, if the individual forgoes to process both the match and the rebate, then her *ex-ante* optimal interior choice of nominal donation is characterized by the first order condition

$$\phi^{-1/\eta} d^{1/\eta} \big(\pi(1+m_1)^{(1+\eta)/\eta} + (1-\pi)(1+m_0)^{(1+\eta)/\eta}\big) = \pi(1-r_1) + (1-\pi)(1-r_0). \tag{24}$$

[16] $\Pr\{r_0|m_1\} = \Pr\{r_0 \cap m_1\} / \Pr\{m_1\} = (1-\pi)/(1-\pi) = 1.$

[17] $\Pr\{r_1|m_0\} = \Pr\{r_1 \cap m_0\} / \Pr\{m_0\} = \pi/(1-\pi).$

Substituting $r_1 = 1 - (1 - r_0)(p_1/p_0)$ and $m_1 = (1 + m_0)(p_0/p_1) - 1$ into the above and solving for the *ex-ante* optimal choice of nominal donation, d^n, yields

$$d^n = \phi \frac{(p_0)^\eta}{1 + m_0} \left(\frac{1 - \pi + \pi(p_1/p_0)}{1 - \pi + \pi(p_1/p_0)^{-(1+\eta)/\eta}} \right)^\eta. \tag{25}$$

This choice results in an expected payoff, gross of processing cost, equal to

$$\begin{aligned} v^n &\equiv 1 - d^n(1 - r_0)\big(1 - \pi + \pi(p_1/p_0)\big) \\ &+ \phi^{-1/\eta} \frac{\eta}{1+\eta} \left(d^n(1 + m_0)\right)^{(1+\eta)/\eta} \left(1 - \pi + \pi(p_0/p_1)^{(1+\eta)/\eta}\right) = \Gamma(\sigma^m = 0, \sigma^r = 0) \equiv \Upsilon^N. \end{aligned} \tag{26}$$

Processing choices

Consider next a distribution of processing cost types, K, having support $\mathcal{K} = [\underline{K}, \overline{K}]$; a distribution of ϕ types, having support $\mathcal{P} = [\underline{\phi}, \overline{\phi}]$; and a distribution of elasticity types, η, having support $\mathcal{N} = [\underline{\eta}, \overline{\eta}]$; and assume that individual characteristics $K(i)$, $\phi(i)$, $\eta(i)$, are independently distributed across individuals.

Focus first on the choice between processing neither match nor rebate and processing the match. The cost type $\tilde{K}^{N,M}(\phi, \eta) \in \mathcal{K}$, for given levels η and ϕ, who will be indifferent between processing neither match nor rebate and processing the match will be identified by the condition $\Upsilon^N = \Upsilon^M - \tilde{K}^{N,M}$, which can be rewritten as

$$\tilde{K}^{N,M} = \Upsilon^M - \Upsilon^N. \tag{27}$$

As the difference $\Upsilon^M - \Upsilon^N$ is linear in ϕ, the difference between the left- and right-hand sides of (27) is linearly homogenous in (K, ϕ), which means that (27) can only uniquely identify a value $\tilde{\rho}^{N,M}$ corresponding to all of those combinations (K, ϕ) for which $K/\phi = \tilde{\rho}^{N,M}$. Thus, dividing both sides of (27) by ϕ, and letting $\Psi^j = \Upsilon^j/\phi$, $j \in \{N, M, R, B\}$, we can rewrite (27) as

$$\tilde{\rho}^{N,M} = \Psi^M - \Psi^N. \tag{28}$$

Then, an individual of cost type $K(i)$ and valuation type $\phi(i)$ will choose to process the match if $K(i)/\phi(i) \leq \tilde{\rho}^M$, and will choose not to process the match otherwise. As ϕ is directly related to the size of the donation, this implies that, for a given level of attention cost, the proportion of individuals choosing to process the match will be comparatively greater for donor types that make comparatively larger donations. Proceeding in the same way, we can derive values

$$\tilde{\rho}^{N,R} = \Psi^R - \Psi^N, \tag{29}$$

and

$$\tilde{\rho}^{N,B} = \frac{1}{2}\left(\Psi^B - \Psi^N\right), \tag{30}$$

that respectively identify individual types that are indifferent between processing neither match nor rebate and processing the rebate, and individual types that are indifferent between processing

neither match nor rebate and processing both. And as for the match, we can conclude that, for a given level of attention cost, the proportion of individuals choosing to process the rebate or both match and rebate will be comparatively greater for donor types making larger donations.

Let us next focus on the choice between processing only the match and processing both match and rebate. The corresponding critical ratio $\rho = K/\phi$ for indifference between the two is

$$\tilde{\rho}^{M,B} = \Psi^B - \Psi^M. \tag{31}$$

For $\eta = 0$, we have $\Psi^B = \Psi^M$ (as no mistake is made by not processing the rebate), and therefore $\tilde{\rho}^{M,B} = 0$; for $\eta < 0$, not processing the rebate involves a mistake, and so $\tilde{\rho}^{M,B} > 0$. With respect to the choice between processing only the rebate and processing both match and rebate, we have

$$\tilde{\rho}^{R,B} = \Psi^B - \Psi^R. \tag{32}$$

For $\eta = -1$, we have $\Psi^B = \Psi^R$ (as no mistake is made by not processing the match), and therefore $\tilde{\rho}^{R,B} = 0$. Then, for $\eta = -1$ (and in a neighbourhood of -1),

$$\tilde{\rho}^{R,B} < \tilde{\rho}^{M,B}, \tag{33}$$

and

$$\Psi^R > \Psi^M; \tag{34}$$

i.e. there will exist individual types for which $\tilde{\rho}^{R,B} < K/\phi$ and for which processing only the rebate will be preferable to processing both match and rebate as well as to processing only the match. Noting that $\tilde{\rho}^{N,R} = \Psi^R - \Psi^N = \Psi^B - \Psi^N - \tilde{\rho}^{R,B}$, and since $\tilde{\rho}^{R,B} = 0$ for $\eta = -1$, we can also conclude that, for $\eta = -1$ (and in a neighbourhood of -1),

$$\tilde{\rho}^{R,B} < \tilde{\rho}^{N,R}, \tag{35}$$

and so

$$\Psi^R > \Psi^N; \tag{36}$$

i.e. there will exist individual types for which $\tilde{\rho}^{R,B} < K/\phi < \tilde{\rho}^{N,R}$ and for which processing only the rebate will be preferable to processing both match and rebate as well as to processing neither.

Together, (33)-(36) imply that, for $|\eta|$ close to unity, there will be individual types for which $K/\phi < \tilde{\rho}^{R,B}$ and for which it will be optimal to process both match and rebate; individual types for which $K/\phi > \tilde{\rho}^{R,B}$ and for which it will be optimal to process only the rebate; and there will be no individual types for which it will be optimal to process only the match.

Appendix A2 How the scenarios were presented

Initial donation

"How likely are you to make any Gift Aid donations to a charity within the next six months? This could be a one-off donation or a regular donation set up as a standing order or direct debit."

- Certain
- Very likely
- Fairly likely
- Not very likely
- Not at all likely
- Don't know

"IF 'Certain' or 'Very likely' or 'Fairly likely': How much do you think that you are likely to give (to the nearest pound)? If the donation you are thinking about is a regular direct debit or standing order, please give the total of that donation for a six month period."

- (write in)

Scenarios

"The Gift Aid scheme allows charities to reclaim the basic rate income tax on your donation and allows higher rate taxpayers to claim back higher rate tax relief. You are now going to be presented with two hypothetical changes to the Gift Aid scheme either to the amount that the charity can reclaim and/or to the amount that higher rate taxpayers can claim back. In each case you will be asked to consider whether the amount of money that you are likely to give to charity would be affected by the proposed changes.

Example:

"Through the Gift Aid scheme, the charity you are donating to reclaims the basic rate income tax on your donation. This is worth 25 pence for every £1 you donate. Suppose instead that the charity received 30 pence for every £1 you donate. (Assume that the amount of higher rate relief that you can claim back is unchanged.) Thinking about your donation of [£X] would this change affect the amount you are likely to give?"

- Yes - I would give more than [£X]
- Yes - I would give less than [£X]
- No - I would give the same amount

- Don't know

"IF 'yes', how much would you be likely to give (to the nearest pound)?"

- (write in)
- Don't know

"IF 'don't know', which of these comes closest to what you think you might increase/reduce your donation by?"

- By 10% or less?
- By more than 10%?
- Don't know

"IF 'more than 10%', Would you increase/reduce your donation by 25% or more?"

- Yes
- No
- Don't know

"IF 'yes', Would you increase/reduce your donation by 50% or more?"

- Yes
- No
- Don't know

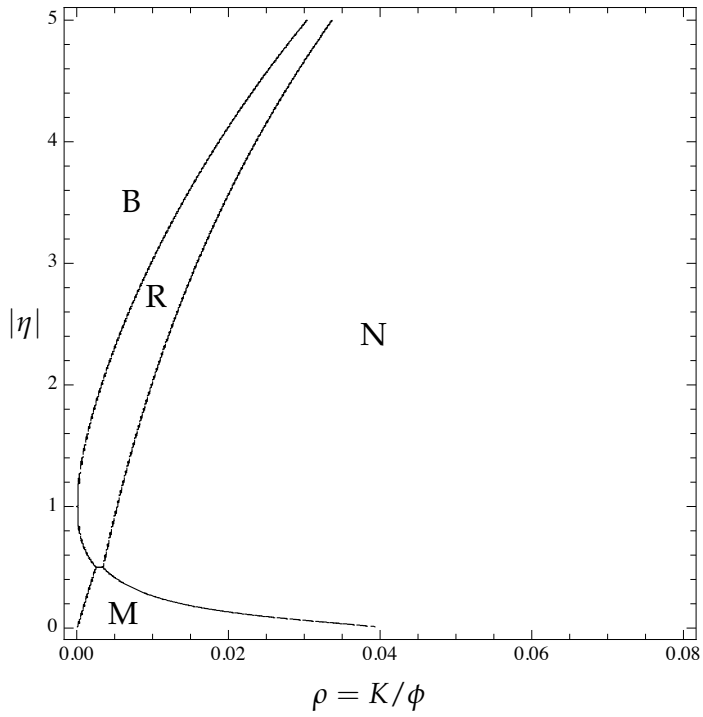


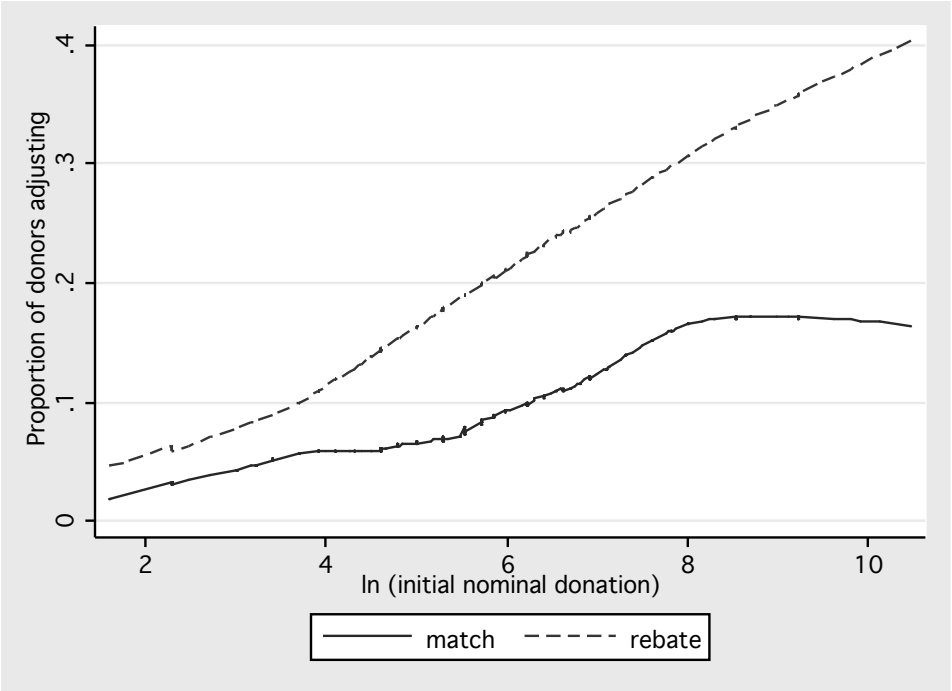
Figure 1: Predicted processing behavior by different donor types
$p_0 = 1, p_1 = 3/4, \pi = 1/6$

Table 1: Responses for sub-groups – survey data

Dependent variable = ln contributions

	Match elasticity	Proportion adjusting	Rebate elasticity	Proportion adjusting	p-value
(a) All donors	−1.127 (*.067*)	.083	−.212 (*.041*)	.183	.0000
(b) Adjusters	−1.929 (*.297*)	.397	−1.431 (*.179*)	.885	.0581
(c) Reclaimers	−1.277 (*.096*)	.117	−.415 (*.091*)	.248	.0000
(d) Good level of understanding	−1.368 (*.116*)	.142	−.440 (*.070*)	.258	.0000

Notes: standard errors in parentheses, p-value is for the test that the match and rebate elasticity are equal



Note: Shows a smoothed, non-parametric estimator of the relationship between donation size and probability of adjusting.

Figure 2: Proportion of donors changing nominal donations

Table 2: Conditional probability of adjusting nominal donations

Proportion who adjust donations when the rebate changes

Proportion of adjusters amongst donors who…	When rebate changes	When rebate increases	When rebate decreases
All			
…don't adjust to the match	.154	.202	.107
…adjust to the match	.679	.697	.657
Reclaimers			
…don't adjust to the match	.201	.305	.108
…adjust to the match	.750	.875	.563

Proportion who adjust donations when the match changes

Proportion of adjusters amongst donors who…	When match changes	When match increases	When match decreases
All			
…don't adjust to the rebate	.039	.047	.032
…adjust to the rebate	.319	.307	.341
Reclaimers			
…don't adjust to the rebate	.043	.032	.050
…adjust to the rebate	.349	.344	.360

Table 3: Probability of adjusting to changes in match and rebate – experimental data

Dependent variable = 1 if donor adjusts pass through rate, = 0 otherwise

	(1)	(2)	(3)	(4)
Change in rebate	.043**	.0489**	.0345*	
	(.021)	(.0207)	(.0211)	
Endowment		.0019**	.0021**	.0021**
		(.0007)	(.0008)	(.0008)
Absolute price change (%)			.0026	−.0570
			(.0476)	(0.0544)
Abs. price change – rebate only (%)				.1031**
				(0.0480)

Change in rebate = 1 if the rebate changes (= 0 if the match changes)
Endowment = total amount that people have to allocate (45, 60, 75)
Absolute price change = absolute percentage change in price
Abs. price change – rebate only = absolute change in price if brought about by a change in the rebate