Web Appendix

The goal of this Appendix is to provide the reader with a framework to interpret our results. We apply a variant of James Andreoni's [1989, 1990] impure altruism model that has recently been used by Craig Landry et al. [2006] to lend insights into door-to-door fundraising. This set-up is also useful in that it provides intuition for the set of factors that might underlie fundraisers' anecdotal evidence concerning matching grants.

For simplicity, we assume that there are n symmetric agents who derive utility from consuming a numeraire good, y, a public good, G, and their own contribution, b, to the public good. Each agent faces a budget constraint $y_i + b_i \leq w$ and derives *ex post* utility according to

(1) $\quad U_i = u(y) + \delta h(G) + \gamma f(b)$

where $u(\square)$, $h(\square)$, and $f(\square)$ are (strictly) increasing and concave; $\delta \in \{0,1\}$. The term $\gamma f(\square)$ depicts the warm-glow effect from giving, where the parameter γ might depend on the presence, and magnitude, of the promised matching grant monies. This implies that as long as γ is positive, the agent receives utility from the mere act of contributing to the public good. Further, we assume that agents have incomplete information regarding the value of the public good, and thus attach a probability δ to $h(G)$.

As described more fully in the text, our experimental treatments include cases where there is no match money, and cases where announced match money is to be used at various ratios ($1:$1, $2:$1, and $3:$1). In the $1:$1 treatment, for instance, every dollar contributed is matched with $1 from a leadership donor; thus a "buy one, get one free" spirit is invoked in this treatment. In this case, $G = 2\sum b$. Individuals give according to the first-order condition (for an interior solution):

(2) $\quad u'(w-b) = \delta h'(n\Phi b) + \gamma f'(b)$,

where Φ is the matching multiplier — $\Phi = 2$ for $1:$1, $\Phi = 3$ for $2:$1, and $\Phi = 4$ for $3:$1. Concavity of the utility functions immediately implies that contributions are increasing in γ.

The first order condition provides intuition into why fundraisers might view matching as an attractive method to enhance contributions. First, the match might work through the warm glow component: given our chosen charity, solicitees might view the match as an opportunity to "be part of the fight" and contribute greater amounts. Second, the match might work through the price effect: the level of individual giving might increase with enhancements in Φ due to the price effect since G is the product of b and Φ. Complementary to this argument is that the announcement of the availability of a leadership gift can reduce or eliminate any uncertainty about the credibility and value of a charitable organization or the particular task at hand, which also generates an increase in equilibrium contributions via δ. Yet, we should be clear that the prediction of increases via this route is ambiguous since a matching grant can also decrease donations because it reduces the marginal utility of the public good. Further assumptions need to be made to yield sharp predictions.

As the text notes, an important alternative set of predictions arises when individuals gain no utility from the actual provision of the public good but simply purchase moral satisfaction when contributing. This intuition can be represented by assuming that utility is solely a function of one's own contribution, $\gamma f(b)$. A stark

prediction resulting from this assumption suggests an insensitivity of individual contributions to the matching grant rate, Φ. Recent theories of social preferences refine this prediction by suggesting that agents are "conditionally" cooperative, or might be willing to contribute more to the public good if they learn that others have previously contributed. The underlying mechanism at work for such behavioural patterns includes models of conformity, social norms, or reciprocity (see the discussion in Frey and Meier, 2005). In this light, the presence of *any* matching ratio might influence a warm glow effect from giving, γ, leading to higher individual contributions in the matching treatments compared to the baseline treatment.

One advantage of this modeling approach is that its flexibility permits a matching grant to work either through the δ or γ terms. Such flexibility, combined with relaxing the assumption of symmetry, permits us to provide a theoretical foundation for both our red/blue state finding and the fact that contributions rise in the presence of a match, but are not monotonically increasing in the match level. A fruitful area of future theoretical research is to refine this model and more fully explore the interplay of the match ratio, the agent's belief about others' giving, and the maximum size of the grant.

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