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**Paper Title:** Guilt and Giving

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### **Summary of Research**

In this paper, I develop a theoretical model of national public radio listeners' decision to contribute money to their local public radio stations and test the predictions of my model using a unique dataset of contribution amounts and the timing of such contributions from two recent pledge drives at Chicago Public Radio. Using the concepts of Bayesian updating of beliefs, individuals decide whether to contribute based on subjective beliefs as to their wealth relative to the wealth of the broader population and their taste for radio relative to the broader population's taste. Individuals feel guilty if they do not contribute.

### **Description**

Models of privately provided public goods focus on explaining three things: Most importantly, they try to understand why people give at all. Then, once it is clear that some individuals will privately fund the public good, the question becomes which individuals these are. Finally, much attention is paid to the mechanisms by which public-good managers encourage giving.

This paper tries to give a more comprehensive understanding of why people give and how managers exploit individuals' reasons for giving when they design fundraising mechanisms. Moving away from the standard model where making contributions negatively impacts agents by lowering their private consumption, a model is developed here in which individuals derive utility from the act of giving itself. In the literature, this is called a model of impure altruism, since the rationale behind donating is now partly selfish; it has been strongly advocated by Andreoni (1988, 1989, 1990). Various explanatory names have been attached to these models of impure altruism, including warm-glow, guilt and an ethic-for-duty. Andreoni (along with others) argues that under so-called models of pure altruism, the incentive to free-ride is too great for all but the wealthiest consumers.

Using a framework created out by Warr (1983) and Bergstrom et al (1986), we try to explain this free-riding result using best response functions. If players best response functions are negatively sloped, as they are under purely altruistic preferences, then the more others give, the smaller will be the agents own contribution. If, on the other hand, we can model preferences that result in positively sloped reaction functions (at least positively sloped over part of the domain), then we can explain why free-riding is not nearly as pervasive a problem as the theory leads us to believe. Indeed, since the majority of Americans (80 percent) profess to donating something to charity over the past year, it seems that this is a characteristic we should demand from our model.

In this paper, we show that best response functions are always negative for pure altruism models, but that adding the level of contribution as a positive argument in players' payoff functions may result in positively sloped reaction functions. In particular, we create a guilt function, such that consumers feel guilty because they use the public good, but do not pay, and because others contribute, but they do not. To allay this guilt -- to produce "peace-of-mind" -- consumers can reduce their level of public good consumption, or they can make a donation.

We then discuss how public goods managers might exploit players' guilt when developing fundraising mechanisms. Marx and Matthews (2000) demonstrated that extending fundraising campaigns over time can increase their efficiency because agents fear punishment from future agents if they do not contribute. We argue that guilt from contributions made by previous agents may also encourage future agents to donate. We do not create a strategic model, however, where agents choose their contribution levels to encourage future giving, but discuss how it could result even without strategic behavior.

Finally, using a unique dataset from recent fundraising drives of the National Public Radio stations in Chicago, it is possible to analyze the timing and size of contributions over given fundraising campaigns. Our results suggest that there are significant size differences between the number of contributors at the beginning or end of campaigns or, similarly, at the beginning or end of individual hours. More

contributions are made in later time periods than in earlier ones. This may be interpreted as a result of players feeling guilty.

A large body of literature does exist on the subject of privately provided public goods and fundraising. The earliest explorations, after Olsen and Samuelson, of the private provision of public goods in simultaneous-move games are by Warr (1983) and Bergstrom et al. (1986) and it is their basic model that is used here. In both of these papers a situation is described in which individuals must choose to allocate their budget between private consumption and contribution to the provision of public goods.

Andreoni (1988), however, argues that the pure altruistic approach to giving doesn't capture all of the elements of private provision of public goods and shows the traditional model of giving generates outcomes that conflict with the empirical results. In particular, Andreoni demonstrates (through simulation) that as the population goes to infinity, the percent of contributing individuals goes to zero, only the richest members contribute and total donations asymptote to a relatively small level.

A number of papers have also been written about fundraising in a dynamic context. Varian (1994) finds that less of the public good is provided if agents move sequentially. His conclusion is that, in sequential games, individuals who value the good less can be forced to be the sole contributors, whereas in simultaneous-move games it is never credible for the highest valuation agents to free ride. Fershtan and Nitzan (1991) and Admati and Perry (1991) also show negative results, where agents can sometimes raise the level of future contributions by lowering current contributions. In this way, dynamics aggravates free-riding. Contrarily, Marx and Matthews (2000) argue that enabling fundraisers to be held over multiple days increases efficiency by enabling agents to punish each other with grim trigger strategies. In their model, individuals can see the total level of contributions made, but not individual gifts.

This paper is a first step towards incorporating the impure models of altruism vigorously argued for by Andreoni with the dynamic models of Marx and Matthews and Fershtan and Nitzan. By adding guilt into player's payoffs, we show that agents can respond positively to contributions by other players, which provides an alternative explanation for why free riding is not more rampant during fundraisers held over longer time periods.

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