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Health-related externalities: Evidence from a choice experiment☆

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ABSTRACT

Health-related external benefits are of potentially large importance for public policy. This paper investigates health-related external benefits using a stated-preference discrete-choice experiment framed in a health care context and including choice scenarios defined by six attributes related to a recipient and the recipient's condition: communicability, severity, medical necessity, relationship to respondent, location, and amount of contribution requested. Subjects also completed a set of own-treatment scenarios and a values-orientation instrument. We find evidence of substantial health-related external benefits that vary as expected with the scenario attributes and subjects' value orientations. The results are consistent with a number of hypotheses offered by the general theoretical analysis of health-related externalities and the analysis of externalities specific to health care.

1. Introduction

Sound policy for transportation, the environment and health care requires an understanding of the nature and magnitude of health-related external benefits. Such external benefits — sometimes referred to safety-focused externalities — derive from altruistic concerns people have for the health and safety of others, which creates utility interdependencies among members of society. The appropriate treatment of health-related externalities in the evaluation of public policies depends on the nature of people's altruistic preferences.

If preferences exhibit either pure altruism, so that person *i* cares about person *j*'s overall level of utility while respecting *j*'s preferences, or pure paternalistic altruism, so that person *i* values person *j*'s consumption trade-offs strictly in terms of *i*'s own preferences, then under a utilitarian social welfare function health-related external benefits should be excluded from cost–benefit analyses of public programs (Bergstrom, 1982, 2006; Jones-Lee, 1992). In each of these cases the altruist cares about both the recipient's loss of utility caused by the need to pay taxes to finance the public program and the recipient's gain in utility from the receipt of program services. In aggregate, these external costs and benefits perfectly offset each other and can be ignored in a cost–benefit analysis. If, however, people are pure health-focused altruists such that person *i*'s concern for person *j* is limited only to person *j*'s health status, then heath-related external benefits should be included in cost–benefit analyses of health-affecting public programs (Jones-Lee, 1991). In this case, the altruist does not care about the recipient's dis-utility caused by paying taxes to finance the program, but does value the recipient's health benefits derived from the program. The altruist's asymmetric treatment of the costs and benefits implies that the external health benefits should be counted in a cost–benefit analysis. More generally, if people exhibit a mixture of pure and health-focused altruism, external benefits should be included to the extent that they derive from health-focused altruism.

A small number of studies have modeled the implications of health-related externalities for the evaluation of health care

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programs. Labelle and Hurley (1992) showed that the efficiency rankings of programs will not be affected by the treatment of paternalistic, health-focused external benefits if the external benefits are the same proportion of patient benefits across programs, but that, if the ratio of external to patient benefits varies across programs, the inclusion of external benefits can lead to rank reversals compared to standard CEA methods that exclude external benefits. Basu and Meltzer (2005) integrate utility interdependencies among family members into CEA and show that the inclusion of such spillover benefits can alter the measured cost-effectiveness of treatment and can affect treatment choices of individuals (if household decision-making internalizes at least some of the spillover effects on other family members). Variation in treatment decisions for prostate cancer by U.S. Medicare beneficiaries of varying ages and marital statuses are consistent with the presence of such interdependencies and their influence on treatment decisions. van den Berg et al. (2005) model interdependencies between informal caregivers and their patients in which each cares about the other's health status and larger amounts of care provided by the informal caregiver improves the health of the patient but decreases the health of the caregiver (due, for example, to burn-out). A test of the model predictions based on surveys of patients and informal caregivers supports the model.

The broader empirical evidence regarding health-related external benefits indicates that health-related external benefits are large in relation both to own-benefits and to external benefits derived from pure altruism. Studies consistently find that people's willingness to pay for an intervention that improves the health and safety of others is a substantial fraction of the amount they are willing to pay to obtain the same benefit for themselves. Jacobsson et al. (2005), for instance, estimated that external benefits equaled 15–20% of own-benefits for severe health conditions; Smith (2007) similarly found average willingness to contribute for the treatment of another person equal to about one-half the willingness to pay for one's own treatment; Andersson and Lindberg (2009) found that willingness to pay for a traffic safety device that would protect the general public was about one-third the willingness to pay for a device that protected only oneself; and parents' willingness-to-pay for policies to reduce health risks or provide treatment to their children actually exceeds their willingness-to-pay for such gains to themselves (Viscusi et al., 1988; Liu et al., 2000; Dickie and Messman, 2004; Dickie and Gerking, 2007). The small number of studies that directly compare health-related altruism and pure altruism find that health-related altruism dominates pure altruism. Jacobsson et al. (2007) compared willingness to contribute cash vs. nicotine patches to diabetic smokers who expressed a willingness to quit smoking but also stated that they were unwilling to pay the cost of nicotine patches themselves. Contributions for the nicotine patches substantially exceeded contributions of cash, a finding that was robust to a number of alternative experimental designs. Similarly, Andersson and Lindberg (2009) found that people were willing to contribute more on behalf of a relative for the rental of a transportation safety device than they were willing to contribute to the relative in cash. Finally, van der Star and van den Berg (2011) find that the strength of health-focused caring externalities depends in part on the extent to which a patient's health problem was caused by their own action vs. factors beyond their control. Health appears to be a special focus for altruistic preferences, but the literature leaves many questions unanswered regarding the specific nature and magnitude of health-related preferences.

This paper contributes to this empirical literature on the nature of health-related externalities by using a community-based stated-preference, discrete-choice experiment to examine health-related externalities associated with the consumption of health care. We focus on health care for two reasons. First, the primary purpose of most health care is the improvement of health, and health care constitutes one of the largest sectors of the economy and of government expenditure. Second, health care raises distinct issues for health-related externalities. Even purely self-interested individuals obtain external benefits from policies targeted at communicable diseases (Weisbrod, 1961). Person *i* benefits from person *j*'s consumption of health care that prevents or cures a communicable disease because it reduces the chances that *i* will contract the disease. But economists have debated two types of paternalistic, "caring" externalities for health care services used to treat non-communicable diseases (Hurley, 2000). Early analyses posited that paternalistic altruism concerns others' consumption of health care per se (Pauly, 1970; Lindsay, 1969). That is, the external benefit derives from the other person's absolute or relative consumption of health care itself. Later analyses argued that the altruism pertains to others' health, in which case health-care-related external benefits arise only for the consumption of health care that improves another's health (Evans and Wolfson, 1980; Culyer and Simpson, 1980).

By studying both communicable and non-communicable conditions, and conditions for which health care improves a person's health vs. those for which it improves well-being for non-health reasons, we shed light on these unique aspects of external benefits associated with health care consumption. As part of a robustness check, we compare contribution behaviour regarding the provision of health care to another individual with an independent measure of a person's value-orientation derived from a validated instrument from social psychology (Messick and McClintock, 1968; Greisinger and Livingston, 1973) that classifies individuals on a 5-category scale from "aggressive" to "altruistic."

We find that, like previous studies, health-related external benefits are substantial in relation to own-benefit and that, although subjects exhibit a baseline of general altruistic preferences, paternalistic health-focused externalities dominate. Similarly, while both selfish and caring externalities exist, caring externalities appear substantially larger. Subjects' contribution behaviour with respect to the treatment of other individuals corresponds as expected with subjects' value orientations. Our findings imply that a full accounting of the benefits of programs that generate health benefits should include external benefits.

2. Methods

Economists have commonly investigated altruism using revealed-choice experiments in the context of either voluntary contributions to public goods or charitable giving (Harrison and Johnson, 2006). While our design draws on this literature, our setting is analytically distinct from each of these contexts. Health care is a private good characterized by both rivalry in consumption and excludability. Unlike public good settings, the donors in our setting do not consume any of the good produced by the contributions; further, strategic free-riding is not a salient aspect of our environment. Our context is closer to studies of charitable giving, since charities often provide private goods. The literature on charitable giving, however, has focused on how different institutional designs affect the level of giving (e.g., Eckel and Grossman, 2003). Further, two features of our setting make it difficult to use a revealed-choice design. First, although many health-related charities exist, no real-life charities exist that provide specific health care services of the type required for our analysis, making it impossible to channel subject donations to a real charity. Second, and even more demanding, we are interested in how different characteristics of a recipient and their condition affect the willingness of a subject to contribute for their treatment. Hence, a revealed-choice