



# Public goods, hidden income, and tax evasion: Some nonstandard results from the warm-glow model<sup>☆</sup>



Daniel M. Hungerman

University of Notre Dame, USA  
NBER, USA

## ARTICLE INFO

### Article history:

Received 25 April 2013  
Received in revised form 14 April 2014  
Accepted 18 April 2014  
Available online 28 April 2014

### Keywords:

Crowd out  
Inter-family transfers  
Tax evasion

## ABSTRACT

A large literature explores crowd out in situations where public goods are jointly provided; work in this area typically depicts a tax system where individuals take taxes as given. But in some settings, such as those in developing economies, efforts to evade or avoid taxes may be widespread. Using the canonical warm-glow model, this paper considers joint public-good provision in a setting where individuals can evade taxes by hiding their income. The model's implications change significantly in this setting: with hidden income, stronger warm glow will lead to greater crowd out, not less. Using research on crowd out and inter-family transfers, I present suggestive evidence that the model's results may help to reconcile divergent estimates of crowd out in the literature.

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## 1. Introduction

The joint provision of public goods is familiar in both developed and developing societies. One of the most studied aspects of this activity is the potential for crowd out: efforts by one party to increase provision of the good may reduce, or crowd out, provision from others. Researchers are frequently interested in whether crowd out leads to less effective government intervention; models of crowd out thus typically include a government using tax revenue to provide some of the public good. Traditionally, individuals in crowd out studies are assumed to take their tax burdens as given. But, in reality, efforts to hide resources from taxation are commonplace in many developing economies (and elsewhere). This paper thus asks: does the ability to hide income alter the standard crowd-out story in important ways? Using the canonical model of crowd out in the literature, the analysis here suggests that it does.

The study here focuses on the warm-glow model of crowd out; individuals in the warm-glow model view resources that they voluntarily donate to the public good as distinct from tax-based contributions (i.e., individuals get a “warm glow” from voluntary donations). The implications of warm glow for crowd out are well known: stronger

warm glow leads to less crowd out and more effective policy intervention. Intuitively, if the government (or perhaps a Non-Governmental Organization or NGO), intervenes to provide more of a public good, warm glow causes individuals to view this intervention as a poor substitute for their own donations. The reluctance to substitute government funds with private donations reduces crowd out.

I show that, if individuals can lower their taxes by choosing to hide a portion of their income from the government, this relationship between warm glow and crowd out is reversed: stronger warm glow will correspond with more crowd out, not less. Intuitively, hiding income is an action that is beneficial to the individual but socially costly. As income is hidden, tax revenues fall and the level of the public good falls. An exogenous intervention to increase the public good can thus induce a response—more hidden income—that makes the intervention less effective. This hidden-income response will be large when individuals place a high value on their own voluntary donations relative to the value they place on the public good. But this is what the warm glow captures: stronger warm glow means that individuals have stronger preferences for their own private behavior relative to social outcomes, and thus stronger warm glow will exacerbate a hidden-income-response that negates policy intervention. I illustrate this result with a simple example and show that the presence of hidden income can lead to much larger crowd out than one would see without hidden income. The analysis here assumes interiority (as is standard) and that individuals choose to hide some, but not all, income. In Section 3, I discuss these assumptions and the extension of this result to situations where some individuals hide income and some do not.

Next, I compare the effect on public-good provision from a change in the tax rate to the effect from a change in the cost of hiding income.

<sup>☆</sup> I am grateful to Tom Gresik, Terry Johnson, Kali Rath, Guillermo Roque, Tihina Zenebe Gebre, Jonathan Wolff, and to the audiences at George Mason University, McMaster University, the University of California-San Diego, Peking University, and the University of Notre Dame for their comments and assistance.  
E-mail address: [dhungerm@nd.edu](mailto:dhungerm@nd.edu).

While [Andreoni \(1990\)](#) found that subsidies have stronger effects than taxation on public good provision, the relative merit of taxation with hidden income is ambiguous. Further, in this setting the relative efficacy of taxation on the level of the public good may depend on the price sensitivity of demand for the public good, an unconventional warm-glow result but a possibility considered by earlier work (cf. [Feldstein, 1980](#)). Finally, I show that an exogenous increase in public good provision (such as an increase in NGO provision) can lower tax revenue, and that this effect is greater as warm glow increases.

Many prior crowd out studies consider settings where institutions are relatively strong and efforts to hide income appear to be limited ([Schneider and Enste, 2000](#)); the results of this paper indicate that in settings where efforts to hide income are pervasive, crowd out may behave quite differently. For instance, when looking at the decisions of adult children in a family to transfer money to their elderly parents, one might wonder whether the introduction of a government pension program for the elderly would crowd out such inter-family transfers. In this case, children may make contributions for both altruistic reasons (concern for their parents' well-being) and for warm-glow-related reasons (e.g., a child's contributions confer parental approval). The traditional analysis would suggest that stronger warm glow incentives would lead to less crowd out and a greater net transfer of income to the elderly from the pension. The analysis here would suggest that, if efforts to hide income are widespread, stronger warm glow would instead increase crowd out.

I undertake a suggestive exploration of this possibility by examining how estimates in the development literature on crowd out and inter-family transfers correlate with warm glow. My measure of warm glow is based on a series of questions in the World Values Survey. Consistent with the standard model, I find that, in countries where individuals have relatively low self-stated inclinations to hide income, published crowd out estimates are positively related to warm glow. But consistent with the model here, in countries with high inclinations to hide income this relationship turns negative. While suggestive, these results help to reconcile the highly diverse set of crowd out estimates extant in the development literature.

These results also contribute to the small area of work that explores how crowd out varies in different circumstances. [Payne \(2009\)](#) suggests that the setting where crowd out occurs may have a large influence on the magnitude of crowd out, but the body of work relating environmental attributes to crowd out behavior is limited and has not considered how efforts to avoid taxation—or features of the tax system more generally—may impact the efficacy of policy interventions.<sup>1</sup> The next section provides motivation for the analysis and introduces the model. [Section 3](#) presents the analysis. [Section 4](#) considers prior crowd out estimates, and [Section 5](#) concludes.

## 2. The warm-glow model with hidden income

### 2.1. The potential role for hidden income

This section presents the basic warm-glow model with hidden income. Before considering the model, however, it will be useful to discuss the significance of hidden income as an economic activity. First, one might ask, do people hide income? The answer frequently

appears to be “yes.” Recent work has documented numerous settings where individuals avoid tax obligations by hiding or concealing taxable resources. [Schneider and Enste \(2000\)](#) show that “shadow” or “clandestine” economic activity is common in developed countries, and they argue that efforts to conceal income may be even more common in developing societies; [Andreoni et al. \(1998\)](#) also discuss high levels of tax evasion in developing countries.<sup>2</sup>

Further, there is evidence that decisions to conceal income may respond to pressures to provide resources that will be transferred to others. For example, [Schneider and Enste \(2000\)](#) conclude that the rise of social security burden (a source of crowd out that will receive more attention below) is “one of the most important causes” of underground economic activity in the world. Social security programs are a case where those making interpersonal transfers (e.g., adult children supporting the elderly) may thus do so through a public program (by complying with taxation) or not. A related decision could be whether to earn income for remittances through the formal or informal sector. As discussed below, the model here extends to individuals deciding how to divide time between formal and informal labor; work suggests that both formal and informal labor opportunities matter for rural-to-urban migrant workers ([Banerjee, 1983](#); [Meng, 2001](#)), sometimes within a given household ([Merrick, 1976](#)). Such a decision may also involve a warm-glow component: a government social security or pension program may be viewed as a non-perfect substitute for family remittances, e.g., because supporting one's parents directly provides warm glow by securing familial approval.<sup>3</sup> Additionally, observers have noted that informal activities may hamper or discourage cooperation with government programs to help those in need ([Foster, 1985](#); [Kaser, 2000](#); [Monaco-Mancini, 1999](#)).

The discussion below focuses on a situation where individuals choose to pay taxes on a portion of their resources; but in many settings in developing societies individuals may either be outside of or inside of the formal economy entirely. There are several observations on this point. First, importantly, the analysis here can incorporate situations where some individuals when choosing how much income to hide arrive at “corner solutions.” Second, there is evidence that, at least in some settings in developing economies, the decision to pay some taxes but to underpay them is economically relevant. For example, [Alm et al. \(1991\)](#) use a variety of data from Jamaica and find that lost taxes from underreporting results in large declines in tax revenue while they also conclude that tax evasion from nonfiling is “enormous.”<sup>4</sup> As mentioned above, the model can also extend to cases where individuals choose to divide labor between informal and formal employment. The model here can also extend to settings where efforts to raise revenues from public goods is informal. For example, a household might face a request to provide an interhousehold transfer (such as in-kind aid or financial assistance to a distressed household) through a community organization; if the household has an incentive to provide such aid directly (for instance, direct aid might help the household fulfill a familial obligation or improve the households reputational status)<sup>5</sup>

<sup>2</sup> [Gordon and Li \(2005\)](#) also argue that difficulty in monitoring taxable activity is a salient aspect of economic policy in developing countries. While developing countries often rely less than other countries on individual-income taxation (which is the type of tax considered here), [Miller et al. \(2011\)](#) show that income taxation is common in both poorer and richer nations.

<sup>3</sup> It has been recognized at least since [Warr \(1982\)](#) that such interpersonal transfers can be considered contributions to a public good.

<sup>4</sup> [Burgess and Stern \(1993\)](#) also discuss underreporting taxes (see section 5.2 of their paper); [Alexandrova \(2013\)](#) gives a non-academic discussion. Moreover, even when individuals comply with the tax code, the model here can also extend to situations of tax avoidance, where individuals take legal but inefficient actions to avoid taxation; [Alm et al. \(1991\)](#) find evidence that reliance on tax-favored forms of compensation leads to a large discrepancy between potential and realized tax revenue (see Table 6 in their paper).

<sup>5</sup> [Schokkaert \(2006\)](#) writes that several incentives fitting the notion of warm glow would appear to be “essential” in the promotion of household transfers; although he notes that non-altruistic motives for such transfers appear to be important and that more work is needed to refine the exact determinants of such behavior.

<sup>1</sup> Attributes considered by prior work include community size ([Ribar and Wilhelm, 2002](#)), community diversity ([Hungerman, 2009](#)), and income ([Cox et al., 2004](#)), but empirical estimates seem to vary in cases where these factors seem unimportant (cf. [Cox et al., 2004](#); [Gibson et al., 2011](#); [Khanna and Sandler, 2000](#); [Kingma, 1989](#); [Payne, 1998](#); [Straub and Manzoor, 2005](#)). Some work has also explored variation in crowd out by considering variation in preferences, rather than in technologies. Among such papers, perhaps the paper closest to this one is a study by [Krause \(2011\)](#), who considers a model where utility depends upon one's voluntary giving relative to the giving of others; Krause provides numerical examples where stronger preferences for “out-donating” others leads to greater crowd out. While interesting, this notion of “relative giving” differs from the traditional depiction of warm glow considered here.

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