Altruism, the Samaritan's Dilemma, and Government Transfer Policy

By STEPHEN COATE*

This paper shows that altruism provides an efficiency rationale for public provision of insurance to the poor. The framework is one in which there are rich altruists and risk-averse poor who face some possibility of loss. The government represents the rich and makes transfers on their behalf. With unconditional transfers the poor may forgo insurance and rely on private charity to bail them out in the event of loss. This reliance on private charity has adverse efficiency effects. These may be avoided if the government makes in-kind transfers of insurance. (*JEL* H42, G22, I18)

Recent years have seen increasing interest in the economic implications of altruism. This reflects both the obvious reality that humans care about the well-being of their fellows and the fact that incorporating altruism into economic models has interesting consequences (see e.g., Gary Becker, 1974; B. Douglas Bernheim and Oded Stark, 1988; Assar Lindbeck and Jorgen Weibull, 1988; Theodore Bergstrom, 1989). From the standpoint of public economics, perhaps the key implication of altruism is that it provides an efficiency rationale for the public provision of transfers to the poor (Harold Hochman and James Rodgers, 1969).[1] Free-riding in the provision of private charity means that the well-being of all citizens can be improved through government transfers. This paper points out that altruism also has implications for the *form* of public transfers to the poor. Specifically, it shows that altruism provides an efficiency rationale for in-kind transfers of insurance.

The framework developed in the paper is one in which the rich care about the well-being of the poor and the poor face some risk of loss (due to unanticipated medical expenses, crop failure, etc.). The government is assumed to represent the rich and to make transfers on their behalf. The starting point for the analysis is the observation that when the government makes unconditional transfers, the poor may have an incentive not to buy insurance and to rely on private charity to bail them out in the event of loss. The rich are unable to commit not to help out the unlucky poor even if the government is making the *ex ante* desirable transfer. This is a manifestation of what James Buchanan (1975) termed the *Samaritan's dilemma*.

The poor's failing to take out insurance in anticipation of private charity is shown to have adverse efficiency effects. These inefficiencies stem from the fact that the rich (rather than the poor) choose how much protection to give the poor against loss. To restore efficiency, the government needs to ensure that the poor obtain insurance. The optimal transfer policy therefore involves providing in-kind transfers of insurance.

*Wharton School, University of Pennsylvania, Philadelphia, PA 19104-6372. I thank James Baumgardner, Tim Besley, Patricia Danzon, Bob Hunt, Sharon Tennyson, Mike Waldman, and two anonymous referees for their very helpful comments on this paper. I am also grateful to Howard Kunreuther, Mark Pauly, and seminar participants at the University of Chicago, University College Dublin, the University of Michigan, New York University, the University of Pennsylvania, and the Third Annual Health Economics Workshop at Johns Hopkins University for useful discussions.

[1]Altruism can also be used to provide an explanation for compulsory saving through social-security schemes (Michael Veall, 1986; Laurence Kotlikoff, 1987; John Laitner, 1988; Ingemar Hansson and Charles Stuart, 1989).

The idea that individuals may underinsure against losses in anticipation of charitable assistance arises in a number of practical contexts. For example, the availability of charity care for those who are poor and uninsured has been suggested as a key factor explaining the large fraction of low-income individuals currently without health insurance in the United States.[2] Similarly, the reluctance of individuals to purchase insurance against natural disasters (floods, hurricanes, etc.) has been linked to the traditional generosity of the American public toward victims of natural disasters.[3] It has also been argued in these contexts that this failure to take out insurance in anticipation of charitable assistance creates certain inequities and inefficiencies. This, in turn, has led to calls for government to mandate or publicly provide health and natural-disaster insurance (see e.g., Kunreuther, 1973; Lawrence Summers, 1989; Mark Pauly et al., 1991). The analytical framework presented in this paper is a natural one in which to examine these issues. By using the ideas of altruism and commitment, it provides an explanation as to why the rest of society provides assistance to the uninsured. It also permits a rigorous analysis of the efficiency consequences of individuals underinsuring in anticipation of charity. The result is an improved understanding of the case for public intervention and the form which this intervention should take.

This paper is related to a recent contribution by Neil Bruce and Michael Waldman (1991). These authors argue that the Samaritan's dilemma can explain why government provides investment goods, such as job training, to transfer recipients. Their idea is that the government is altruistic toward its citizens and cannot commit to deny future transfers to noninvestors. This analysis shows that the Samaritan's dilemma for in-kind transfers holds even when the government can commit, provided only that private charity is responsive to the plight of transfer recipients. It also demonstrates that, under these conditions, arguments involving the Samaritan's dilemma can be used to justify in-kind transfers of insurance, as well as investment goods. Finally, by employing the usual assumption that the government has the power to commit, the paper shows how to incorporate this type of argument for in-kind transfers into the standard public-economics framework.

The organization of the paper is as follows. The first section presents the model. Section II provides a benchmark by describing optimal transfer policies when citizens can commit not to give charity. This assumption is relaxed in Section III, and a case for publicly provided insurance is established. Section IV considers the implications of the poor's having self-insurance opportunities. Section V contains some discussion of the results and their implications, and Section VI concludes.

I. The Model

Consider an economy consisting of just three individuals and a government. Two of the individuals are "rich" and the other is "poor." The poor person has income y_{P}. He faces two states of nature: "good" and "bad." In the bad state he suffers a loss L. In either state, he receives utility from consumption x according to the twice continuously differentiable utility function $u(x)$. He is assumed to be nonsatiated and risk-averse, so that $u'(x) > 0$ and $u''(x) < 0$ for all levels of consumption x. The probability of the bad state occurring is $\pi \in (0,1)$, and insurance is available at actuarially fair rates in a private market. Thus, the poor person can purchase coverage which reimburses an amount z of his loss for a premium πz.

The two rich individuals are identical. Each has income $y_{\mathrm{R}} > y_{\mathrm{P}}$. To avoid unnecessary complications, the rich are assumed to be risk-neutral with respect to their own consumption and to face no uncertainty about their incomes. In addition to obtaining utility from their own consumption, they

[2] Kimberly Rask (1991) presents an empirical test which supports this hypothesis.

[3] The survey data in Howard Kunreuther et al. (1978) shows that a sizable fraction (30 percent) of uninsured households admit to anticipating receiving assistance.

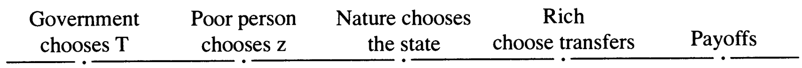

FIGURE 1. THE SEQUENCE OF EVENTS

care about the welfare of the poor person. Specifically, rich person i's ($i = 1,2$) utility when he has x units of consumption and the poor person's utility level is u_{P}, is given by $u_{\mathrm{R}}^{i} = x + \delta u_{\mathrm{P}}$, where $\delta > 0$.

The government is assumed to represent the interests of the rich.[4] It acts so as to maximize their joint welfare which is given by $W_{\mathrm{R}} = u_{\mathrm{R}}^{1} + u_{\mathrm{R}}^{2}$. Because of the free-rider problem, maximizing the welfare of the rich will require the government to make transfers to the poor. The government therefore sets up a transfer program. Under this program the poor person receives an (*ex ante*) cash transfer T, which is financed by taxes of $T/2$ on each rich person.

The interaction between the agents is summarized in Figure 1. The government moves first by choosing a transfer T from rich to poor. The poor person then chooses the amount of insurance he wishes to buy in the private market. Next, the state of nature is revealed, and the rich may, if they so choose, give "charitable" transfers to the poor person. In choosing charitable transfers, each rich person is assumed to act independently taking the transfer of the other rich person as given. This "Nash-behavior" assumption is standard in the charity literature.

The government, when choosing a transfer policy, acts as a "Stackleberg leader," anticipating the likely responses of its citizens. This is the usual approach to analyzing the design of optimal tax/transfer programs. The novel feature of this model is that the rich may make charitable transfers to the poor person after he has made his insurance decision and the state of nature is revealed.[5] The poor person, in making his insurance decision, will take the possibility of charitable transfers into account. This gives rise to a potential Samaritan's dilemma problem. If the amount of charity depends on his degree of insurance, then the poor person's incentive to buy insurance will be lessened.

The essential difference between this model and that of Bruce and Waldman (1991) lies in the separation of the actions of government and private charity. Bruce and Waldman consider the interaction between a parent and a child, with the parent being the altruist. They employ a two-period deterministic model with the parent giving transfers in both periods and the child taking an investment decision in the first period. In applying the model to transfer policy, the parent is interpreted as the government, and it is assumed that the government cannot commit not to bail out the "child" (welfare recipient) in the event she underinvests in period 1. In the model of this paper, the government commits to a transfer *ex ante*; it is private citizens who cannot commit not to help out the transfer recipient.

This completes the description of the basic model. While simple, it captures the essence of a number of different scenarios. One interpretation arises in the context of health insurance. The poor person faces some risk of getting sick and, if sick, requires a course of treatment which costs L. The rich are unable to commit not to help out should the poor person fall sick and have no insurance. Alternatively, the poor

[4] The analysis is readily extended to environments in which the government cares (independently) about the welfare of the poor person.

[5] In that it combines government transfers and private charity, the model is similar to that of Russell Roberts (1984). However, in Roberts's model there is no uncertainty and hence no Samaritan's dilemma.

person may be a small farmer who faces some risk of losing his crop. If the weather is good he obtains income y_P, while if it is bad he only gets $y_P - L$. Finally, in an international context, the rich may be thought of as representing U.S. citizens, and the poor person as a representative citizen of a developing country. The government transfer can then be thought of as foreign aid.

II. Government Transfer Policy When Citizens Can Commit

This section analyzes optimal transfer policies in the case when the rich can commit to a level of charitable transfers before the poor person makes his insurance decision. In terms of Figure 1, each rich person can be thought of as (simultaneously) announcing a pair of state-contingent charitable transfers after the government has chosen T but before the poor person chooses his level of insurance coverage. The poor person therefore takes these as independent of his own decisions. While unrealistic, this case provides a useful benchmark for the case without commitment.

To find the optimal transfer level, the government first calculates how its citizens will behave under any given program. It then chooses that program which, taking into account this behavior, attains the highest level of welfare for the rich. Intuitively, it is clear that the optimal transfer will be sufficiently large that the rich have no incentive to make additional charitable transfers of their own. After all, the government transfer internalizes the free-rider problem. The analysis will therefore proceed under the assumption that each rich individual commits to give no charity. It will then be verified that at the resulting level of government transfers, this is indeed an optimal strategy for the rich.

Suppose that the government were to give the poor person a transfer T. Given that he is risk-averse and insurance is available at actuarially fair rates, he would want to insure fully. Thus he would buy L units of coverage at cost πL and obtain expected utility $u(y_P + T - \pi L)$. This means that each rich individual's expected utility will be $y_R - T/2 + \delta u(y_P + T - \pi L)$, and the welfare of the rich will be

$$(1)\quad W_R(T) = 2y_R - T + 2\delta u(y_P + T - \pi L).$$

The optimal transfer, denoted T^o, is implicitly defined by the following first-order condition:

$$(2)\qquad 2\delta u'(y_P + T^o - \pi L) = 1.$$

This says that the marginal benefit to the rich of giving the poor person extra income must equal the marginal cost in terms of their own consumption.

It is easy to verify that, at this level of transfers, the rich would choose not to give charity. If the bad state were to occur and the poor person were to suffer a loss, each rich individual's utility would be given by $y_R - T^o/2 + \delta u(y_P + T^o - \pi L)$. A rich individual would only have an incentive to give a transfer if his marginal valuation of the poor person's consumption, which equals $\delta u'(y_P + T^o - \pi L)$, exceeds the marginal utility of his own consumption, which equals 1. But equation (2) implies that $\delta u'(y_P + T^o - \pi L)$ equals $\frac{1}{2}$. Since the same is true if the good state occurs, the rich have no incentive to give charitable transfers. Thus if the rich can commit to levels of charitable transfers, the equilibrium involves the government transferring T^o, and the rich giving no additional charity. The level of welfare for the rich is $W_R^o = W_R(T^o)$.

The allocation of resources at this equilibrium is *ex ante Pareto efficient*. *Ex ante* efficiency requires that the allocation of resources in each state be efficient (*ex post efficiency*) and that the allocation of resources across states be efficient. For *ex post* efficiency the public good, the poor person's consumption, must be supplied at efficient levels. This requires that the sum of the marginal rates of substitution of the rich between the poor person's consumption and their own consumption is less than or equal to 1 (Roberts, 1984). If the poor person is consuming x_{P}, each rich individual's marginal rate of substitution is $\delta u'(x_{\mathrm{P}})$. Thus the condition for *ex post* efficiency is that the poor person's consumption is such that $2\delta u'(x_{\mathrm{P}}) \leq 1$. This is guaranteed by (2). For the allocation of resources across states to be efficient the poor person must have equal consumption in both states. This is satisfied since the poor person is fully insured.

III. Government Transfer Policy When Citizens Cannot Commit

Assume now that the rich are unable to commit not to give charity. Rather, they will (independently and simultaneously) choose those charitable transfers that maximize their utility, given the state of nature and the poor person's level of insurance. This section shows that when public transfers are given in cash the allocation of resources may be inefficient. This means that if the government is restricted to using cash transfers, the commitment level of welfare for the rich ($W_{\mathrm{R}}^{\mathrm{o}}$) may be unattainable. Nonetheless, the government can achieve the same allocations as under commitment, and hence the commitment welfare level, by publicly providing insurance.

A. *The Inefficiency of Cash Transfers*

Suppose that the government gives the poor person a cash transfer T. Assume that this transfer is sufficiently large so that the rich would have no incentive to give cash transfers to the poor person if he fully insured, that is, that $\delta u'(y_{\mathrm{P}} + T - \pi L) \leq 1$. Provision of any smaller cash transfer would clearly result in an inefficient allocation since it would not internalize the free-rider problem.

Consider the poor person's insurance decision. If he anticipated receiving no help from the rich in the bad state, he would fully insure. The assumption that $\delta u'(y_{\mathrm{P}} + T - \pi L) \leq 1$ means that if he did fully insure he would indeed get no assistance. However, if he were to purchase less than full insurance his income after the loss might be sufficiently low to induce transfers from the rich.

To find out how much the poor person would receive, it is necessary to describe the equilibrium determination of charitable transfers. Suppose that the poor person has coverage level z and that the bad state has occurred. Let τ_i $(i = 1, 2)$ denote the charitable transfer from rich individual i. A pair of transfers (τ_1^*, τ_2^*) is an *equilibrium*, if

$$(3)\quad \tau_i^* = \operatorname{argmax}\{y_{\mathrm{R}} - T/2 - \tau_i + \delta u(y_{\mathrm{P}} + T + (1-\pi)z - L + \tau_i + \tau_{-i}^*) : \tau_i \geq 0\} \qquad i = 1, 2.$$

Let $\tau^*(T, z)$ denote the aggregate level of transfers in equilibrium given T and z. From (3) it follows that

$$(4)\quad \tau^*(T, z) = \max\{0, \xi(T) - (1-\pi)z\}$$

where the function $\xi(\cdot)$ is implicitly defined by the condition $\delta u'(y_{\mathrm{P}} + T - L + \xi(T)) \equiv 1$. The assumption that the rich are risk-neutral with respect to their own consumption means that any distribution of the aggregate level of transfers between the two rich individuals is an equilibrium. The function $\tau^*(\cdot)$ defined by (4) will be referred to as the *charity function*.

The poor person will take into account the charity function when choosing how much coverage to buy. Thus he will select a level of coverage $z^*(T)$, where

$$(5)\quad z^*(T) = \operatorname{argmax}\{\pi u(y_{\mathrm{P}} + T + (1-\pi)z - L + \tau^*(T, z)) + (1-\pi)u(y_{\mathrm{P}} + T - \pi z) : z \geq 0\}.$$

The bracketed expression on the right-hand side of (5) is the poor person's expected utility with government transfer T, coverage level z and charitable transfer $\tau^*(T,z)$ in the bad state. The coverage level $z^*(T)$ is therefore the expected-utility-maximizing level (given government transfer T) taking account of the possibility of charitable transfers.

The following lemma shows that the poor person will either purchase no insurance $[z^*(T)=0]$ or full insurance $[z^*(T)=L]$. In addition, it establishes that if the poor person would forgo insurance at some transfer level T^* larger than T, he will also forgo insurance at transfer level T. This fact will prove useful in the analysis to follow.

LEMMA 1: *(i) Either* $z^*(T)=0$ *or* $z^*(T)=L$. *(ii) If* $T<T^*$ *and* $z^*(T^*)=0$, *then* $z^*(T)=0$.

PROOF:

To establish part (i), it is necessary to understand how the poor person's expected utility as defined on the right-hand side of (5) varies with the coverage level z. Substituting (4) into (5), it can be seen that over the range in which charitable transfers are positive, increasing z has no effect on the poor person's consumption in the bad state. Extra insurance coverage "crowds out" private charity on a one-for-one basis. However, it does reduce consumption in the good state. It follows that the poor person's expected utility is decreasing in z on the interval $[0,\xi(T)/(1-\pi)]$. Once charitable transfers fall to zero, increasing z serves to increase expected utility until the point of full insurance. Thus the poor person's expected utility is increasing on the interval $(\xi(T)/(1-\pi), L]$ and decreasing thereafter. The result now follows.

To prove part (ii), define $\Delta(\tilde{T})$ to be the utility gain from forgoing insurance when the cash transfer is $\tilde{T}\in[T,T^*]$; that is.

$$\Delta(\tilde{T}) = \pi u\big(y_P+\tilde{T}-L+\tau^*(\tilde{T},0)\big) + (1-\pi)u\big(y_P+\tilde{T}\big) - u\big(y_P+\tilde{T}-\pi L\big).$$

By hypothesis $\Delta(T^*)>0$, so that it is enough to show that $\Delta(\cdot)$ is decreasing in $\tilde{T}$ on the interval $[T,T^*]$. Since $\Delta(T^*)>0$ and $\xi(\tilde{T})$ is decreasing in $\tilde{T}$, (4) implies that $\tau^*(\tilde{T},0)=\xi(\tilde{T})$ for all $\tilde{T}\in[T,T^*]$. Furthermore, $\xi'(\tilde{T})=-1$, and thus over the relevant range

$$\Delta'(\tilde{T}) = (1-\pi)u'\big(y_P+\tilde{T}\big) - u'\big(y_P+\tilde{T}-\pi L\big) < 0.$$

The poor person's choice between the two options of no insurance and full insurance will depend on the magnitude of the charitable transfer $\tau^*(T,0)$. The benefit of forgoing insurance (relative to purchasing full coverage) is an additional πL units of consumption in the good state. The cost is less consumption in the bad state. Equation (4), the definition of $\xi(T)$, and the assumption that $\delta u'(y_P+T-\pi L)\leq 1$, together imply that $\tau^*(T,0)$ is less than $(1-\pi)L$. Thus, while the charitable transfer does partially compensate the poor person for his loss, his consumption in the bad state, $y_P+T-L+\tau^*(T,0)$, will be less than if he fully insured, $y_P+T-\pi L$. This loss of consumption in the bad state will be lower the larger is the charitable transfer, and hence forgoing insurance will prove the best strategy when $\tau^*(T,0)$ is sufficiently large.

If the poor person does forgo insurance, the resulting allocation of resources will be neither *ex ante* nor *ex post* efficient. The allocation of resources across states is inefficient because the poor person does not have equal consumption in both states. His consumption in the good state exceeds that in the bad state. Moreover, the allocation of resources in the bad state will be inefficient because of free-riding in the provision of charity. As noted in the previous section, *ex post* efficiency requires that the poor person's consumption be such that $2\delta u'(x_P)\leq 1$;[6] but, by definition, $\delta u'(y_P+T-L+\xi(T))=1$. Thus all individuals could be made better off in the bad state if extra

[6]Provided that $T\geq T^{o}-\pi L$, the allocation of resources in the good state will be efficient.

resources were transferred from the rich to the poor.[7] These inefficiencies mean that the government may be unable to achieve the welfare level W_R^o for the rich with unconditional transfers.[8]

PROPOSITION 1: *Suppose that the poor person would choose not to take out insurance if given the transfer T^o; that is, $z^*(T^o)=0$. Then the government cannot achieve the welfare level W_R^o for the rich with a cash-transfer program.*

PROOF:

Part (ii) of Lemma 1 implies that if the poor person would not take out insurance when given the transfer T^o, he will forgo it if given any smaller transfer. It follows that public provision of any cash transfer $T \leq T^o$, such that $\delta u'(y_P + T - \pi L) \leq 1$, will result in the poor person's forgoing insurance and an inefficient allocation of resources. As noted earlier, the allocation of resources at the commitment equilibrium is efficient. Moreover, it is the efficient allocation at which the welfare of the rich is maximized. Thus the welfare of the rich at any inefficient allocation must be strictly less than W_R^o. Consequently, the government cannot achieve the commitment welfare level for the rich with a cash transfer $T \leq T^o$. While public provision of a cash transfer $T > T^o$ may result in the poor person purchasing insurance and an efficient allocation, such an allocation will involve too much redistribution to the poor from the viewpoint of the rich. Thus their welfare will still be strictly less than W_R^o.

B. *The Case for Public Provision of Insurance*

Suppose that the government were to provide the poor person with a cash transfer $T^o - \pi L$ and L units of insurance coverage. Under this program, the poor person has a consumption level of $y_P + T^o - \pi L$ in both states. The rich have a tax bill equal to the transfer $(T^o - \pi L)$ plus the cost of the public insurance (πL), which amounts to T^o. This is precisely the allocation achieved with commitment. As shown in Section II, there is no incentive for the rich to provide transfers to the poor person in the bad state at these consumption levels. Thus this scheme achieves the welfare level W_R^o which was possible with commitment.[9]

In fact, the government need not provide the poor person with full insurance coverage. Public provision of a coverage level $z < L$ together with a cash transfer $T^o - \pi z$ will also achieve the welfare level W_R^o for the rich if it induces the poor person to purchase supplementary coverage $L - z$. This is possible since partial public coverage reduces the benefits of forgoing full insurance, while leaving the costs unchanged. The extra consumption the poor person gets in the good state as a result of forgoing full insurance is reduced to $\pi(L-z)$. The loss of consumption in the bad state remains constant since the partial public coverage simply crowds out the charitable transfer. The following proposition demonstrates the existence of a critical level of partial coverage sufficient to induce the purchase of supplementary coverage.

PROPOSITION 2: *There exists some $\underline{z} \in [0, L)$ with the property that the government can achieve the welfare level for the rich W_R^o by providing the poor person with z units of insurance coverage together with a cash transfer $T^o - \pi z$ if and only if $z \in [\underline{z}, L]$.*

[7] It is important to note that this is conditional on the poor person choosing not to take out insurance. From an *ex ante* viewpoint, free-riding may be socially beneficial as it reduces the attractiveness of forgoing insurance. Thus free-riding *by* the rich can prevent the poor from free-riding *on* the rich.

[8] If the government is restricted to using only cash transfers, then the second-best optimal policy can be shown to involve either providing the poor person with a cash transfer $T^o - \pi L$ or providing him with the smallest cash transfer necessary to induce him to insure fully.

[9] As a referee points out, this result assumes that the poor person cannot undo the in-kind transfer of insurance coverage by betting against the occurrence of the bad state.

PROOF:

In light of the above discussion, it is enough to show that there exists some $\underline{z} \in [0, L)$ such that the poor person will purchase supplementary coverage $L - z$ if and only if $z \in [\underline{z}, L]$. Note first that if the government provides the poor person with z units of coverage and a cash transfer $T^{\text{o}} - \pi z$, it is as if he had received a cash transfer T^{o} and purchased z units of insurance himself. Thus the charitable transfer the poor person would receive in the bad state if he purchased no supplementary coverage would be $\tau^*(T^{\text{o}}, z)$, and his expected utility would be

$$V(z) = \pi u(y_{\text{P}} + T^{\text{o}} + (1-\pi)z - L + \tau^*(T^{o}, z)) + (1-\pi)u(y_{\text{P}} + T^{\text{o}} - \pi z).$$

Following the logic of part (i) of Lemma 1, it is clear that the poor person will either purchase full supplementary coverage $(L - z)$ or none. His expected utility if he purchased full supplementary coverage would be $u(y_{\text{P}} + T^{\text{o}} - \pi L)$, and thus he will choose this option if and only if $u(y_{\text{P}} + T^{\text{o}} - \pi L) \geq V(z)$. As shown in the proof of Lemma 1, the function $V(\cdot)$ is decreasing on $[0, \xi(T^{\text{o}})/(1-\pi)]$ and increasing on $(\xi(T^{\text{o}})/(1-\pi), L]$. Moreover, $V(\xi(T^{\text{o}})/(1-\pi))$ is strictly less than $u(y_{\text{P}} + T^{\text{o}} - \pi L)$ which equals $V(L)$. Consequently, letting

$$\underline{z} = \min\{z \in [0, L) : u(y_{\text{P}} + T^{\text{o}} - \pi L) \geq V(z)\}$$

one has that $u(y_{\text{P}} + T^{\text{o}} - \pi L) \geq V(z)$ if and only if $z \in [\underline{z}, L]$.

It is worth noting that if T^{o} is less than $\pi \underline{z}$, the optimal cash transfer to the poor person will be negative. Thus the efficient policy will involve providing the poor person with insurance coverage and taxing him. Proposition 2 therefore implicitly assumes that the government has the power to tax the transfer recipient. If this assumption is not satisfied, as in the foreign-aid example, the welfare level W_{R}^{o} is not attainable through public provision when $T^{\text{o}} < \pi \underline{z}$. The (second-best) optimal policy will be to provide the poor person with the smallest level of coverage necessary to induce him to insure fully.

Proposition 2 shows how *public* provision of insurance can resolve the problems created by the Samaritan's dilemma. The possibility of the rich making in-kind transfers of insurance has been ignored. However, one might expect that the rich, aware of the Samaritan's dilemma, would have an incentive to provide such transfers. Certainly, this is in their collective interest.[10] In the situation analyzed in subsection III-A, providing the poor person with $\tau^*(T, 0) = \xi(T)$ units of insurance coverage would commit the rich to providing no charitable transfers in the bad state. The poor person, knowing this, would be induced to insure himself fully by purchasing supplementary coverage. In fact, the rich can induce this action by providing a smaller level of coverage $z_{\text{R}}(T)$, where

$$(6) \quad u(y_{\text{P}} + T - \pi(L - z_{\text{R}}(T))) = \pi u(y_{\text{P}} + T - L + \xi(T)) + (1-\pi)u(y_{\text{P}} + T).$$

With this level of coverage the poor person is just as well off fully insuring himself as he is forgoing supplementary insurance and receiving a charitable transfer of $\xi(T) - z_{\text{R}}(T)$ in the bad state. The rich will be better off under this arrangement since its cost, $\pi z_{\text{R}}(T)$, is smaller than the expected charitable transfer, $\pi \xi(T)$, and it leaves the poor person just as well off.

[10]This conclusion may not be valid under imperfect information. Imperfect information about the poor person's income, say, will mean that the rich will not know whether or not he really would forgo insurance. They may be better off delaying making transfers, in the hope that the poor person will actually purchase insurance of his own accord.

If the rich were to provide such an in-kind transfer, the adverse efficiency consequences of the Samaritan's dilemma would be eliminated. The poor person would have equal consumption in both states, and his level of consumption in each state, $y_P + T - \pi(L - z_R(T))$ would be efficient (i.e., $2\delta u'(x_p) \leq 1$) provided that T were sufficiently large. Public provision of the cash transfer T, where $\hat{T} + \pi z_R(\hat{T}) = T^o$ would result in achievement of the commitment level of welfare for the rich W_R^o.[11] Public provision of insurance coverage for the poor person would not be necessary.

Just because an action is in the collective interest of a group, however, does not mean that such an action will arise as the outcome of decentralized decision-taking. The problem in this instance is that individuals cannot appropriate all of the future gains from providing the poor person with in-kind transfers. The benefit in terms of lower future charitable transfers will be partially shared by others.

To understand this, observe first that if the poor person is provided with any level of coverage $z < z_R(T)$, he will forgo purchasing supplementary coverage and receive a charitable transfer $\xi(T) - z$ in the bad state. As noted earlier, any distribution of this transfer between the two rich individuals is a possible equilibrium, but suppose for concreteness that the rich expect to contribute equal amounts. Then if rich individual 1 provides the poor person with $z_R(T)/2$ units of insurance coverage, this reduces the anticipated charitable transfer in the bad state to $\xi(T) - z_R(T)/2$, or $\xi(T)/2 - z_R(T)/4$ per person. Provided that $z_R(T) > 2\xi(T)/3$, rich individual 2 will be better off paying an *ex post* charitable transfer of $\xi(T)/2 - z_R(T)/4$ than providing the poor person with $z_R(T)/2$ units of insurance coverage. Under this condition, therefore, each rich individual providing the poor person with $z_R(T)/2$ units of insurance coverage is not an equilibrium if the rich expect to share the charitable transfer in the bad state equally. Thus, even if the rich can make in-kind transfers, there is no guarantee that they will choose to do so. When they choose not to do so, the government must ensure that the poor person obtains insurance, or the inefficiencies identified above will arise.

IV. The Samaritan's Dilemma and Self-Insurance

In many of the situations to which the model might apply, the transfer recipient may have *self-insurance* opportunities (Isaac Ehrlich and Becker, 1972); that is, he will be able to take actions which serve to reduce the severity of loss if the bad state occurs. The peasant farmer in a drought-prone region can plant hardier seeds, and the welfare recipient can obtain medical advice or vaccinations which will reduce the likelihood of her needing serious medical care if she gets sick. This section points out that in the presence of such opportunities, the Samaritan's dilemma creates a further form of inefficiency.

To allow for self-insurance, assume that the loss incurred by the poor person in the bad state is $L(I)$, where I denotes self-insurance expenditures. The function $L(\cdot)$ is twice continuously differentiable, decreasing, and convex. Thus increasing self-insurance serves to reduce the loss but at a nonincreasing rate. Let $\bar{L}$ denote the maximal level of loss, that is, $\bar{L} = L(0)$.

Insurance coverage and self-insurance are alternative ways the poor person may protect himself against loss in the bad state. It is therefore useful to think of him as choosing a level of protection against loss $p \in [0, \bar{L}]$. The extremes of $p = 0$ and $p = \bar{L}$ correspond, respectively, to zero and full protection. Define $c(p)$ to be the minimum cost of obtaining p units of protection; that is,

$$(7) \quad c(p) = \min\{I + \pi z : L(I) - z \leq \bar{L} - p\}.$$

Let $(z^*(p), I^*(p))$ denote the cost-minimizing protection package. Provided that $-L'(0) > 1/\pi$, it will involve some self-insurance being undertaken, that is, $I^*(p) > 0$.

[11] If the poor person would forgo insurance when given the cash transfer T^o, $\hat{T}$ exists and is unique.

In the commitment equilibrium, the poor person will choose to protect himself fully (i.e., set $p = \bar{L}$) and will choose the cost-minimizing protection package $(z^*(\bar{L}), I^*(\bar{L}))$. He will receive government transfer T°, where

$$(8) \qquad 2\delta u'\big(y_{\mathrm{P}} + T^{\circ} - c(\bar{L})\big) = 1.$$

Without commitment, the poor person will take account of the possibility of charitable transfers in the bad state. The charity function will now be given by

$$(9) \quad \tau^*(T,p) = \max\{0, \xi(T) - [p - c(p)]\}.$$

It is straightforward to show that the argument of Lemma 1 remains valid in this more general setting. The poor person will either obtain zero or full protection.

If the poor person chooses zero protection there is now a further source of inefficiency.[12] The protection given to the poor person by the rich is not provided in a cost-effective manner. The expected social cost of the $\tau^*(T,0)$ units of protection is $\pi\tau^*(T,0)$, which is greater than $c(\tau^*(T,0))$. The government can overcome this inefficiency by providing in-kind transfers of self-insurance as well as insurance coverage. The commitment level of welfare for the rich can be achieved with government provision of a cash transfer $T^{\circ} - c(\bar{L})$ and an in-kind package $(z^*(\bar{L}), I^*(\bar{L}))$.[13]

This type of inefficiency drives Bruce and Waldman's (1991) argument for in-kind transfers. In their model, the child's investment opportunity is not available to the parent (e.g., going to college). The child underutilizes this opportunity because investment reduces his future transfer. As a consequence, the social cost of providing his future consumption is higher than it need be. Efficiency is restored when the parent makes in-kind transfers of the investment good.

V. Discussion

The previous two sections identify some adverse efficiency consequences of individuals' not taking out insurance in anticipation of charity. These inefficiencies all stem from a common source. In order to get a charitable transfer, the poor person, by forgoing insurance, must leave himself unprotected so that the rich feel compelled to provide him with aid should the loss occur. When in this state, it is the rich who by their choice of transfers decide how much to compensate the poor person for his loss. Thus the poor individual does not decide how much protection to have against loss, for "beggars can't be choosers." There is no reason to expect the rich to choose the level of protection that is optimal for the poor person. This is the first source of inefficiency. Moreover, because of the free-rider problem, the level of charity given is not even optimal from the viewpoint of the rich, which results in the second form of inefficiency. A final form of inefficiency arises in the presence of self-insurance opportunities, because in this case the rich will not provide protection in a cost-effective manner.

The health and natural-disaster literatures do not appear to have identified all of these adverse efficiency consequences. Most of the discussion has focused on the distributional implications of underinsuring by individuals. Not having health or disaster insurance has been condemned as "unfair" because it shifts cost to others. Where efficiency is discussed, the focus is on the waste stemming from protection not being provided in a cost-effective manner. (In the health case, this manifests itself in uninsured patients requiring more expensive medical procedures than would be necessary, say, if they had regular check-ups and

[12]The model can also be extended to analyze self-protection opportunities which reduce the likelihood of loss. To do this, one simply assumes that $\pi = \pi(I)$, where $\pi' < 0$ and $\pi'' \geq 0$. Similar results apply in this case. If the poor person forgos insurance, the level of self-protection he chooses will be inefficient.

[13]Public provision of self-insurance will be necessary to achieve the commitment welfare level if public provision of a cash transfer $T^{\circ} - \pi z^*(\bar{L})$ together with $z^*(\bar{L})$ units of insurance coverage is not sufficient to induce the poor person to purchase supplementary protection.

followed medical advice. In the disaster context, individuals fail to refrain from building or buying houses in vulnerable areas, which increases their losses when disaster strikes.) For these literatures, therefore, this paper suggests two further potential sources of inefficiency: the uninsured individuals' having suboptimal levels of protection and the free-rider problem.[14]

The analysis shows how public provision of insurance and self-insurance can resolve the problems created by the Samaritan's dilemma. This provides a possible rationale for public programs like Medicaid and the National Flood Insurance Program. There are, however, alternative policies which might be considered. The government could mandate that the poor person have adequate coverage and continue to provide all transfers in cash.[15] Alternatively, the government could subsidize insurance by offering transfers conditional on insurance being undertaken. The key point is that the government must ensure that the poor obtain insurance; it does not matter how this is achieved.

This paper assumes that the rich have purely altruistic preferences, an assumption that has been criticized in recent years. James Andreoni (1988) and Robert Sugden (1982), for example, have argued that it generates predictions which are at variance with the facts about charitable giving. Andreoni (1990) has shown that the assumption of *impure* altruism resolves many of the discrepancies. Under this view, individuals are postulated to care not only about the consumption of the poor, but also about the magnitude of their own charitable contributions. The idea is that the act of giving itself generates utility (a "warm glow") for contributors.

Introducing impure altruism into the model has little substantive effect on the analysis. The poor person still has an incentive to underinsure. It does mean, however, that there is no longer an unambiguous case for public provision of insurance. An additional consideration introduced into the analysis is the utility the rich get from giving charity. If the rich get a warmer glow from giving to those in need, as seems reasonable, then the possibility of such need may actually enhance their well-being.[16] Consequently, it may not be desirable to eliminate such possibilities by publicly providing insurance.

VI. Conclusion

A familiar and important result in public economics is that if the rich are altruistic toward the poor there is an efficiency rationale for public provision of transfers to the poor. This paper has shown that altruism also has implications for the form of public transfers. Specifically, it has demonstrated that if the poor face some risk of loss and are risk-averse, then it may be efficient to provide them with in-kind transfers of insurance and self-insurance. The presence of altruism therefore provides an explanation (or justification) for, among other things, providing low-income individuals with health insurance and small farmers with crop insurance and for giving drought-prone devel-

[14]To what extent the free-rider problem is a significant source of inefficiency in these contexts is debatable. Today, the vast majority of charity health care is financed by "cost shifting" (charging higher prices to those with insurance) rather than direct charitable contributions. This may be a mechanism for circumventing the free-rider problem. Similarly, natural-disaster assistance is currently provided by the public sector as well as the private sector. An extended discussion of the applicability of the ideas of this paper to charity health care and disaster assistance can be found in an earlier version of this paper, obtainable from the author on request.

[15]This rationale for insurance mandates should be contrasted with the more familiar argument based on considerations of adverse selection. Note also that mandates would not be possible if the transfer recipient is outside the government's jurisdiction, as in the foreign-aid example.

[16]In terms of Buchanan's (1975) original argument, if the Samaritan is impure in his altruism he may face no dilemma. The "parasite," by leaving himself unprotected, gives the Samaritan a chance to feel good about himself as he helps out.

oping countries aid in the form of irrigation projects rather than unrestricted grants.

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