

Stark, Oded; Falk, Ita

Book Part — Published Version

On the Transfer Value of Gratitude

Suggested Citation: Stark, Oded; Falk, Ita (1997) : On the Transfer Value of Gratitude, In: Giersch, Herbert (Ed.): Reforming the Welfare State, ISBN 978-3-642-60497-3, Springer, Berlin, Heidelberg, pp. 313-326,
https://doi.org/10.1007/978-3-642-60497-3_17

This Version is available at:

<https://hdl.handle.net/10419/234835>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

On the Transfer Value of Gratitude

Oded Stark and Ita Falk

The literature on private transfers tends to differentiate between two main transfer motives: exchange and altruism (for a recent review see Laitner [1997]; for a recent empirical analysis see Cox and Rank [1992]). An exchange-driven transfer is *positively* correlated with the income of the recipient; a recipient is better equipped to provide a service (for example, insurance or support) to a donor when the recipient's income is higher. A higher anticipated return then prompts a higher transfer. This reasoning implicitly assumes the recipient's willingness to provide a service. An altruism-driven transfer is *negatively* correlated with the income of the recipient. The donor cares about the recipient's well-being. A decline in this well-being prompts an infusion of support aimed at raising the recipient's income and consumption. This reasoning explicitly assumes that the donor's *attitude* toward the recipient is parameterized by an altruism coefficient attached to the recipient's utility in the donor's utility function, and implicitly assumes that the recipient's attitude toward the donor is given; indeed, that in the donor's mind or heart it plays no role whatsoever.

In contrast, this paper draws attention to the possibility that altruism and exchange may be intertwined, that in a setup ordinarily viewed as altruistically motivated the attitude of the recipient is endogenous, and that as a consequence, from the donor's point of view, a transfer that is associated with a formal exchange arrangement may be inferior

We acknowledge with gratitude helpful advice and useful comments transferred to us by Eduardo Archetti, Kjersti Larsen, Karl Ove Moene, Atle Seierstad, Jon Strand, and Steinar Strøm. We thank the National Institute on Aging (grant R01-AG13037) and the Professor Wilhelm Keilhau's Minnefond for partial financial support.

to a transfer that is not associated with a recipient's commitment to pay back the donor. This analytical track is introduced through the inclusion of a recipient's empathy function in which empathy is induced by gratitude. We formalize the donor's decision-making as an optimization problem that incorporates anticipation of the recipient's gratitude. This gratitude is a function of the size of the donation and of the recipient's pretransfer income. We assume that gratification is expressed through a probable transfer that is valued by the donor. Consequently, lower income may be *positively* correlated with a *seemingly altruistic* transfer (that is, a transfer devoid of a payback commitment) because such an income is associated with a stronger sense of gratitude. Since under well-specified conditions the donor's marginal utility arising from a gratitude-eliciting transfer in our model, and the donor's marginal utility arising from a transfer in the standard pure altruism model, correlate *negatively* with the recipient's pretransfer income, the ability to infer motive from conduct is jeopardized; the two motives give rise to types of behavior that can be observationally equivalent.

Typically, the literature on altruism studies the implications of altruistic links for allocative behavior, consumption transfers, and well-being—taking altruism as a given (cf. Stark, 1995, Ch. 1)—and only rarely does it venture to explain altruism (cf. Stark, 1995, Ch. 6). Indeed, the question of how altruism is instilled and what explains its evolution lie at the very frontier of research on preference formation and transfer behavior. We suggest that transfers, along with the conditions under which they are made, affect preferences and hence that altruism can arise as a response to actions rather than be orthogonal to them.

There is an intense interest in gift-making in social anthropology dating back at least to Mauss (1966). The literature arising from that interest has apparently turned a blind eye to the argument that return is prompted by gratitude, concentrating instead on the moral obligation of the recipient of a gift to reciprocate and on the social mechanisms that support, indeed mandate, reciprocity.

Akerlof (1982) has pointed out that workers may give a gift to their firm by providing work in excess of the minimum work required because “they tend to develop a sentiment for their co-workers.” Harder work could prompt the firm to relax the pressure on workers who are unable to meet the minimum work required. By working “at a speed in excess of work rules, . . . if [a worker] has sympathy for other members

of the work group, he derives utility from the firm's generous treatment of other members of the group for whom the work rules are a binding constraint." What then underlies the ensuing "gift exchange" formed between the firm and its workers is co-worker empathy. Why exactly the empathy ("sentiment") arises is not explained; it is *assumed* to evolve.

Hirshleifer (1987) considers how gratitude ("an emotion") guides the response of agent "Second" to the productive allocation of agent "First". A more cooperative productive decision by First raises Second's income. Consequently, Second's ability to react in a grateful way increases, as does his inclination to react gratefully. Being aware of Second's contingent behavior, First alters his allocation away from the "short-sightedly selfish optimum." First is prompted to choose an allocation that is more favorable to Second because Second's gratitude-motivated transfer to First is rising in Second's income. That Second's gratitude can correlate *negatively* with his *initial* income, indeed *emanate* from a low initial income, is not being considered, however.

I The Model

We seek to model and contrast two forms of transfers: a loan and a gift (donation). A loan differs from a gift in a fundamental way. Ordinarily, a loan is requested and the terms governing its execution are negotiated and agreed upon. The recipient is actively involved in the process. In contrast, a gift is a noncontracted good and usually does not reflect prior involvement by the recipient. A disposition to reciprocate can therefore be expected to arise in the case of a gift, but not in the case of a loan. Laboratory experiments conducted by social psychologists as early as in the 1960s support this distinction. Reciprocation is reported to occur in contexts where subjects have no "rational expectation" of gain and to vary directly with the subject's perception that the "prior help" (for which reciprocation is to be made) was given *voluntarily* (Goranson and Berkowitz, 1966; and Greenglass, 1969).

We construct a dynamic model that captures several features pertaining to production (investment) under uncertainty, ability to repay, and the formation of empathy along with a willingness to provide help. We develop the model to forge a comparison between an optimizing agent's marginal benefit from making a loan, and an optimizing agent's marginal benefit from giving a gift, calculated with respect to the recipi-

ent's income. This results in the identification of a domain and thereby the establishment of a condition in which giving a gift dominates granting a loan.

A Utility, Investment, and Income

Consider two agents, indexed by $i = 1, 2$, and two periods, $t = 0, 1$. Superscripts will henceforth denote the agent, and subscripts will denote the period. There is one commodity in the economy denoted by c . The price of c is equal to one. Both agents have the same expected utility function

$$U^i = U_0^i + \rho E(U_t^i), \quad i = 1, 2 \quad (1)$$

where U_t^i denotes periodic utility, and ρ is a subjective discount rate. $E(\cdot)$ denotes expected value. Both agents have the same periodic utility function of the form

$$U_t^i = u(c_t^i) + \alpha_t^i u(c_t^j), \quad i, j = 1, 2 \quad i \neq j \quad t = 0, 1 \quad (2)$$

where $u(c)$ is strictly monotonic increasing and concave. α^i is an empathy coefficient. It indicates the value individual i assigns to individual j 's welfare in forming his own utility. Assume that the starting empathy coefficients are the same for both agents, that is, $\alpha_0^1 = \alpha_0^2$. Empathy in period 1 encompasses the gratitude, g , of agent i toward agent j ,

$$\alpha_1^i = \alpha_0^i + g_1^i. \quad (3)$$

The gratitude depends upon help in the form of a gift (donation) that an agent had received from his counterpart in the preceding period. It also depends upon the recipient's need for help at the time. Suppose that an agent's need for help depends upon his pretransfer income. We can thus write

$$g_1^i = g(Y_0^i, d^j), \quad (4)$$

where d^j denotes a donation from agent j to agent i , and Y_0^i is agent i 's pretransfer income or endowment. In particular, suppose that gratitude is positively correlated both with the size of the gift and with the recipient's need for help. Measure the need for help by $(Y_0^i)^{-1}$. We can then write

$$g(Y_0^i, d^j) = d^j / Y_0^i; \quad Y_0^i > 0. \quad (5)$$

For simplicity's sake, we choose $\alpha_0^i = 0$; $i = 1, 2$. Substituting the explicit terms for α_0^i and g_1^i , empathy in period 1 becomes

$$\alpha_1^i = d^j/Y_0^i, \quad i = 1, 2. \quad (6)$$

The starting endowments, Y_0^i , are given. Take agent 1 to be the richer agent, that is, the agent whose initial endowment is larger, $Y_0^1 > Y_0^2$. I denotes savings and investment. Income in period 1, Y_1^i , is a function, $f^i(I_0^i)$, of the agent's investment at the starting period. Assume that $f^i(I_0^i) > 0$ and $f^{i''}(I_0^i) \leq 0$, $i = 1, 2$.

There is a distinct possibility that due to a disaster the returns of either agent will be reduced to the bankruptcy level b^i , $i = 1, 2$. The probability that agent i is affected by a disaster is p^i , $i = 1, 2$. Assume that an agent's ability to partially insure himself against the effects of a disaster is positively correlated with the agent's pretransfer income. Thus, $0 < p^1(Y_0^1) < p^2(Y_0^2)$. Assume that $p^i(Y_0^i)$ is differentiable.

For simplicity's sake, we will assume that within the relevant investment range of either agent the (positive) returns from investment are linear, that is, $f^{i''}(I_0^i) = 0$. (Nonlinearity will complicate the analysis without changing any key insights.) We can therefore write

$$f^i(I_0^i) = k^i I_0^i, \quad i = 1, 2. \quad (7)$$

Assume as well that $k^2 > k^1 > 0$. This assumption ensures that both agents could benefit from a loan to the poorer agent by the richer agent. The richer agent may transfer a sum of money to the poorer agent under one of two programs: a loan, or a gift (donation).

The interest rate on a loan, s , is exogenous. Suppose that s is so set that the marginal utility of lending a (first) unit of money and the marginal utility of borrowing that same unit exceed zero, for the donor and the recipient, respectively (that is, $k^2 > 1 + s > k^1$); both agents can benefit from a loan. The recipient receives the loan in period 0 and pays back $1 + s = \delta$ in period 1. In the event that the recipient is afflicted by a disaster, the recipient's debt is exempted.

A gift (donation) does not "officially" bind the recipient in any way, but it instills gratitude and in turn, elicits empathy. The recipient thus feels obliged to help the donor should the donor suffer from a disaster in the subsequent period. However, in the event that the recipient is struck by a disaster, he would not be able to help the donor.

Assume that the size of the loan, or alternatively the size of the donation, is equal to one unit (of income). We seek to compare the

marginal return to the donor from a loan with the marginal return to the donor from a gift (donation).

B A Loan

As a matter of course, the terms of the loan are prenegotiated. The marginal benefit to the donor is independent of the marginal benefit to the recipient from the given loan. It is thus sufficient to formulate the donor's decision problem.

The donor's budget constraints are given by the deterministic and the stochastic terms, with respect to period 0 and period 1, respectively. The loan, l , is equal to one unit of income. Hence,

$$c_0^1 = Y_0^1 - I_0^1 - l_0^1 = Y_0^1 - I_0^1 - 1 \quad (8)$$

and

$$c_1^1 = \begin{cases} k^1 I_0^1 + \delta & \text{with a probability of } (1 - p^1)(1 - p^2) \\ b^1 + \delta & \text{with a probability of } p^1(1 - p^2) \\ k^1 I_0^1 & \text{with a probability of } (1 - p^1)p^2 \\ b^1 & \text{with a probability of } p^1 p^2. \end{cases} \quad (9)$$

The donor maximizes his expected utility, U^1 . With his empathy coefficients at zero in both periods, his expected utility arises solely from his own well-being

$$\begin{aligned} \text{Max}_{I_0^1} \{ & u(Y_0^1 - I_0^1 - 1) + \rho[(1 - p^1)(1 - p^2)u(k^1 I_0^1 + \delta) \\ & + p^1(1 - p^2)u(b^1 + \delta) + (1 - p^1)p^2u(k^1 I_0^1) + p^1 p^2 u(b^1)] \}. \end{aligned} \quad (10)$$

The first-order condition follows

$$\begin{aligned} u'(Y_0^1 - I_0^1 - 1) \\ = \rho k^1 [(1 - p^1)(1 - p^2)u'(k^1 I_0^1 + \delta) + (1 - p^1)p^2 u'(k^1 I_0^1)]. \end{aligned} \quad (11)$$

The marginal utility of the loan, MUL (calculated for a loan of one unit) is given by the derivative of the expected utility with respect to the loan, given a loan of one unit, and given that I_0^1 is optimally chosen¹

¹ Rewrite the maximand U^1 in (10) with a loan of a small magnitude l substituting the loan of one unit and repayment of $l\delta$ substituting repayment of δ . Evaluate U^1 differentiated with respect to l at $l = 1$ to obtain (12).

$$\begin{aligned}
MUL^1(l=1) &= \partial U^1 / \partial l^1(l=1) = -u'(Y_0^1 - I_0^1 - 1) \\
&\quad + \rho \delta [(1-p^1)(1-p^2)u'(k^1 I_0^1 + \delta) \\
&\quad + p^1(1-p^2)u'(b^1 + \delta)]. \tag{12}
\end{aligned}$$

Substituting the first-order condition (11) in the last equation allows us to find the marginal utility of a loan, for an optimal I_0^1

$$\begin{aligned}
MUL^1 &= \rho \{ [(1-p^1)(1-p^2)u'(k^1 I_0^1 + \delta)][\delta - k^1] \\
&\quad + \delta p^1(1-p^2)u'(b^1 + \delta) - k^1[(1-p^1)p^2 u'(k^1 I_0^1)] \}. \tag{13}
\end{aligned}$$

Differentiating MUL^1 in (13) with respect to Y_0^2 we find a connection with the recipient's pretransfer income

$$\begin{aligned}
\partial MUL^1 / \partial Y_0^2 &= (\partial MUL^1 / \partial p^2)(\partial p^2 / \partial Y_0^2) \\
&= -\rho [(1-p^1)u'(k^1 I_0^1 + \delta)(\delta - k^1) + \delta p^1 u'(b^1 + \delta) \\
&\quad + k^1(1-p^1)u'(k^1 I_0^1)](\partial p^2 / \partial Y_0^2). \tag{14}
\end{aligned}$$

Recall that $(\delta - k^1) > 0$. Hence, the term $[(1-p^1)u'(k^1 I_0^1 + \delta)(\delta - k^1) + \delta p^1 u'(b^1 + \delta) + k^1(1-p^1)u'(k^1 I_0^1)]$ is positive. We conclude that the marginal utility of a loan is *positively* correlated with the recipient's pretransfer income.

C A Gift (Donation)

Since help for the donor depends upon the recipient's empathy, we start this section by formulating the recipient's decision problem.

The Recipient's Decision

Denote by r the help the recipient will offer the donor in period 1. Recall that help is offered only if the richer agent is subject to a disaster while the poorer agent is not. The budget constraints of the recipient are given by the deterministic and the stochastic terms below, for period 0 and period 1, respectively. Again we take the donation, d^1 , to be equal to one unit. Hence,

$$c_0^2 = Y_0^2 - I_0^2 + d^1 = Y_0^2 - I_0^2 + 1 \tag{15}$$

and

$$c_1^2 = \begin{cases} k^2 I_0^2 - r & \text{with a probability of } (1 - p^2)p^1 \\ k^2 I_0^2 & \text{with a probability of } (1 - p^2)(1 - p^1) \\ b^2 & \text{with a probability of } p^2. \end{cases} \quad (16)$$

The decision variables of the recipient are his investment, I_0^2 , and his offered help, r . Since he is given a gift (donation) and is being helped in period 0, gratitude is forged and thereupon empathy toward the helping donor is sensed. Hence, in period 1, the recipient's utility weighs the well-being of both agents. The recipient maximizes his expected utility, U^2

$$\begin{aligned} \text{Max}_{I_0^2, r} \{ & u(Y_0^2 - I_0^2 + 1) + \rho \{ p^2 [u(b^2) + \alpha_1^2 [(1 - p^1)u(k^1 I_0^1) \\ & + p^1 u(b^1)]] + (1 - p^2)(1 - p^1)[u(k^2 I_0^2) + \alpha_1^2 u(k^1 I_0^1)] \\ & + (1 - p^2)p^1 [u(k^2 I_0^2 - r) + \alpha_1^2 u(b^1 + r)] \} \}. \end{aligned} \quad (17)$$

The first-order conditions follow

$$\begin{aligned} u'(Y_0^2 - I_0^2 + 1) = & \rho k^2 \{ (1 - p^2)(1 - p^1)u'(k^2 I_0^2) \\ & + (1 - p^2)p^1 u'(k^2 I_0^2 - r) \} = 0, \end{aligned} \quad (18)$$

$$u'(k^2 I_0^2 - r) = \alpha_1^2 u'(b^1 + r). \quad (19)$$

Substituting (6) (where we take $\alpha_1^2 = d/Y_0^2$), that is, the explicit value of the gratitude and thus the empathy, in the last equation, this equation can be rewritten as

$$Y_0^2 u'(k^2 I_0^2 - r) = du'(b^1 + r). \quad (20)$$

The Donor's Decision

The donor's budget constraints are given by the sure value and the expected value for period 0 and period 1, respectively. We have

$$c_0^1 = Y_0^1 - I_0^1 - d^1 = Y_0^1 - I_0^1 - 1 \quad (21)$$

and

$$c_1^1 = \begin{cases} b^1 + r & \text{with a probability of } p^1(1 - p^2) \\ k^1 I_0^1 & \text{with a probability of } (1 - p^1) \\ b^1 & \text{with a probability of } p^1 p^2. \end{cases} \quad (22)$$

The donor maximizes his expected utility. Since he receives nothing in period 0, his empathy coefficient is equal to zero in period 1. Hence, his utility in this period incorporates solely his own consumption. We therefore write

$$\begin{aligned} \text{Max}_{I_0^1} \{ & u(Y_0^1 - I_0^1 - 1) + \rho[p^1(1 - p^2)u(b^1 + r) + (1 - p^1)u(k^1 I_0^1) \\ & + p^1 p^2 u(b^1)] \}. \end{aligned} \quad (23)$$

The first-order condition is

$$-u'(Y_0^1 - I_0^1 - 1) + \rho k^1 [(1 - p^1)u'(k^1 I_0^1)] = 0. \quad (24)$$

The marginal utility of a gift (donation) to the donor, MUD^1 , is given by the derivative of his expected utility with respect to the gift. The value of MUD^1 for a gift of one unit is²

$$MUD^1(d^1 = 1) = -u'(Y_0^1 - I_0^1 - 1) + \rho \frac{\partial r}{\partial d} p^1 (1 - p^2) u'(b^1 + r). \quad (25)$$

Substituting (18), (20), and (24)—the first-order conditions of *both* agents—in this last equation allows us to calculate the value of MUD^1 , given that both agents follow their optimal strategies. We thus obtain

$$\begin{aligned} MUD^1 &= -\rho k^1 (1 - p^1) u'(k^1 I_0^1) + \rho \frac{\partial r}{\partial d} Y_0^2 p^1 (1 - p^2) u'(k^2 I_0^2 - r) \\ &= -\rho k^1 (1 - p^1) u'(k^1 I_0^1) + \left(Y_0^2 \frac{\partial r}{\partial d} \frac{1}{k^2} \right) \\ &\quad \cdot [u'(Y_0^2 - I_0^2 + 1) - \rho k^2 (1 - p^2) (1 - p^1) u'(k^2 I_0^2)]. \end{aligned} \quad (26)$$

Note that although the value of MUD^1 is negative for $Y_0^2 = 0$, since, from (20),

$$\frac{\partial r}{\partial d} = -\frac{u'(b^1 + r)}{Y_0^2 u''(k^2 I_0^2 - r) + du''(b^1 + r)} > 0, \quad MUD^1 \text{ turns positive for}$$

² Rewrite the maximand U^1 in (23) with a donation of a small magnitude d substituting the donation of one unit. Evaluate U^1 differentiated with respect to d at $d = 1$ to obtain (25).

$$Y_0^2 > \tilde{Y}_0^2 \equiv \frac{\rho k^1 k^2 (1 - p^1) u'(k^1 I_0^1)}{\frac{\partial r}{\partial d} [u'(Y_0^2 - I_0^2 + 1) - \rho k^2 (1 - p^2) (1 - p^1) u'(k^2 I_0^2)]} > 0,$$

where the last inequality follows from $\frac{\partial r}{\partial d} > 0$ and from (18).

In order to specify the relationship between MUD^1 and the recipient's pretransfer income we differentiate MUD^1 in (26) with respect to Y_0^2 to obtain

$$\begin{aligned} \frac{\partial MUD^1}{\partial Y_0^2} &= \frac{1}{k^2} \left\{ \frac{\partial r}{\partial d} [u'(Y_0^2 - I_0^2 + 1) + Y_0^2 u''(Y_0^2 - I_0^2 + 1)] \right. \\ &\quad + \rho k^2 (1 - p^1) u'(k^2 I_0^2) \left[Y_0^2 \frac{\partial p^2}{\partial Y_0^2} - (1 - p^2) \right] \frac{\partial r}{\partial d} \\ &\quad + Y_0^2 \frac{\partial(\partial r / \partial d)}{\partial Y_0^2} [u'(Y_0^2 - I_0^2 + 1) - \rho k^2 (1 - p^2) (1 - p^1) u'(k^2 I_0^2)] \\ &\quad \left. - Y_0^2 \frac{\partial I_0^2}{\partial Y_0^2} \frac{\partial r}{\partial d} [u''(Y_0^2 - I_0^2 + 1) + \rho (k^2)^2 (1 - p^2) (1 - p^1) u''(k^2 I_0^2)] \right\}. \end{aligned} \quad (27)$$

We examine the signs of the four terms of the right-hand side of (27). Plausibly, the first term $[u'(Y_0^2 - I_0^2 + 1) + Y_0^2 u''(Y_0^2 - I_0^2 + 1)]$ is negative. This is so because $u''(Y_0^2 - I_0^2 + 1)$ is negative, and the absolute value of $Y_0^2 u''(Y_0^2 - I_0^2 + 1)$ is likely to exceed the absolute value of $[u'(Y_0^2 - I_0^2 + 1)]$. To see this take, for example, the case of $u(c) = \ln c$. The first term then becomes $[(Y_0^2 - I_0^2 + 1)^{-1} - Y_0^2 (Y_0^2 - I_0^2 + 1)^{-2}]$ which is clearly negative.³ The second term is negative since

³ Consider the more general Box-Cox transformation of consumption $u(c) = \begin{cases} \frac{c^\alpha - 1}{\alpha} & \text{for } \alpha \neq 0 \\ \ln c & \text{for } \alpha = 0 \end{cases}$. u is strictly concave if $\alpha < 1$. Define $R_R = -\frac{xu''(x)}{u'(x)}$. Then

$$\begin{aligned} u'(Y_0^2 + 1 - I_0^2) + Y_0^2 u''(Y_0^2 + 1 - I_0^2) &= u'(Y_0^2 + 1 - I_0^2) \left[1 + \frac{Y_0^2 u''(Y_0^2 + 1 - I_0^2)}{u'(Y_0^2 + 1 - I_0^2)} \right] = \\ u'(Y_0^2 + 1 - I_0^2) \left[1 + \frac{Y_0^2}{Y_0^2 + 1 - I_0^2} (-R_R) \right] &< 0 \text{ if } \alpha < 1 - \frac{Y_0^2 + 1 - I_0^2}{Y_0^2}. \end{aligned}$$

$\left[Y_0^2 \frac{\partial p^2}{\partial Y_0^2} - (1 - p^2) \right]$ is negative. (Recall that $\frac{\partial p^2}{\partial Y_0^2} < 0$.) The sign of the third term depends on the sign of $\frac{\partial(\partial r/\partial d)}{\partial Y_0^2}$, since $[u'(Y_0^2 - I_0^2 + 1) - \rho k^2(1 - p^2)(1 - p^1)u'(k^2 I_0^2)]$ is positive as can be seen from (18). It is natural to assume that $\frac{\partial(\partial r/\partial d)}{\partial Y_0^2} < 0$; an increase in donation will prompt a smaller gratitude-induced help from the recipient the higher is his pretransfer income. The fourth term is positive.

If the curves depicting MUD^1 and MUL^1 were to be plotted against Y_0^2 in the (Y_0^2, MU) plane, how will the slope of MUD^1 (equation (27)) compare to the slope of MUL^1 (equation (14))? In particular, we seek to find out whether $\frac{\partial MUD^1}{\partial Y_0^2}$ is smaller than $\frac{\partial MUL^1}{\partial Y_0^2}$. Note that if the fourth (positive) term of $\frac{\partial MUD^1}{\partial Y_0^2}$ is smaller than $\frac{\partial MUL^1}{\partial Y_0^2}$, then $\frac{\partial MUD^1}{\partial Y_0^2}$ is a fortiori smaller than $\frac{\partial MUL^1}{\partial Y_0^2}$. Comparing the fourth term of (27) with $\frac{\partial MUL^1}{\partial Y_0^2}$ we obtain

$$\begin{aligned}
 & -Y_0^2 \frac{\partial I_0^2}{\partial Y_0^2} \frac{\partial r}{\partial d} [u''(Y_0^2 - I_0^2 + 1) + \rho(k^2)^2(1 - p^2)(1 - p^1)u''(k^2 I_0^2)] \\
 & < -\rho[(1 - p^1)u'(k^1 I_0^1 + \delta)(\delta - k^1) + \delta p^1 u'(b^1 + \delta) \\
 & \quad + k^1(1 - p^1)u'(k^1 I_0^1)] \frac{\partial p^2}{\partial Y_0^2}, \tag{28}
 \end{aligned}$$

which holds, for example, for a sufficiently large absolute value of $\frac{\partial p^2}{\partial Y_0^2}$.

It may also be noted that $u'(Y_0^2 + 1 - I_0^2) + Y_0^2 u''(Y_0^2 + 1 - I_0^2) < 0$ if $u'(Y_0^2 + 1 - I_0^2) \left[1 + \frac{Y_0^2}{Y_0^2 + 1 - I_0^2} (-R_R) \right] < 0$ that is, if $R_R > \frac{Y_0^2 + 1 - I_0^2}{Y_0^2}$, which indeed holds since R_R is believed to be at least 1 (Arrow, 1965; Pemberton, 1991).

(Note that a larger absolute value of $\frac{\partial p^2}{\partial Y_0^2}$ results in the second term in (27) becoming an even larger negative term.)⁴

Therefore, if the curves depicting MUL^1 and MUD^1 intersect, we derive a critical pretransfer income of the recipient, Y_0^{2*} , such that for values of $Y_0^2 < Y_0^{2*}$ a gift is chosen over a loan, while for values of $Y_0^2 > Y_0^{2*}$ a loan is preferable to a gift. Hence, a key result of our model is that for levels of pretransfer income of the recipient that are relatively low, an optimizing agent will donate rather than lend. A (probable) gratitude-induced transfer that a donation will bring about is more valuable than a (probable) payment of interest cum principal that a loan will entail.

II Conclusions

An argument may be made that since gift-giving in our model is motivated by an exchange consideration, our model is merely the standard exchange model in disguise. As alluded to in the introduction, the received exchange model predicts that transfers are positively correlated with the recipient's pretransfer income. Since our model predicts a negative correlation, our model is anything but a variant of the received model.

Our model can co-explain several findings from a 1988–1989 survey of four villages in Northern Nigeria (Udry, 1994). (1) Although borrowers and lenders negotiate the size of loans, explicit interest rates and repayment dates are almost never set. (2) Realized rates of return are lower and repayment periods are longer for debtor households which

⁴ The meaning and impact of a higher absolute value of $\frac{\partial p^2}{\partial Y_0^2}$ are as follows: When the recipient's pretransfer income is higher, the probability that he will be affected by a disaster goes down by much. This is desirable to the donor whose marginal utility from a loan is consequently higher. Whereas in this loan-giving case only one (positive) effect operates, in the case of gift-giving two effects operate, with the net effect being adverse. A higher pretransfer income matched by a much reduced probability of a disaster while better enabling the recipient to offer help is also associated with a weaker incentive to offer help. The joint impact of these effects is that the marginal utility to the donor from a gift is lowered.

receive adverse shocks; borrowers receiving such shocks pay back less. (3) Repayments respond to the circumstances of the lending household; lenders who receive adverse shocks are paid back more. These seemingly unrelated findings can be linked causally. Effectively, loans are partially turned into gifts to low-income recipients, and recipients pay more to donors upon the donors falling on hard time. The “ambiguity” pertaining to the terms of the loans allows a state-contingent conversion of loans into (partial) gifts. The returns that accrue to transfers as gifts are higher than the returns that would have accrued had the transfers been strict loans.

Our analysis points to several possible extensions. Suppose there are two would-be recipients whose incomes are near and below Y_0^2 . Other things held constant, a gift (donation) will then go to the poorer of the two. Suppose, alternatively, that the assumption that the size of the transfer is one unit is relaxed. Then, the recipient's pretransfer income will be negatively correlated with the amount donated (and positively correlated with the amount lent). Hence our model and the standard altruism-motivated transfers model can give rise to behavioral patterns that are observationally indistinguishable.

The model may plausibly apply to the behavior of donor nations and to the form and targeting of foreign aid. If the recipient country is relatively poor, the optimal transfer would be a gift (donation); if the recipient country is less poor—the optimal transfer would be a loan. The total returns to a donor country from foreign aid to several recipient countries are maximized when the relatively poor recipients receive a gift while those that are better-off receive a loan. Thus, the emotional claim that a relatively poor country should be helped by a donation rather than by a commercial loan is apparently supported by rational calculus and maximization of the returns to the donor from the distribution of foreign aid.

Bibliography

- Akerlof, G.A. 1982. “Labor Contracts as Partial Gift Exchange.” *Quarterly Journal of Economics* 92:543–570.
- Arrow, K.J. 1965. *Aspects of The Theory of Risk-Bearing*. Helsinki: Yrjö Jahnssonin Säätiö.
- Cox, D., and M.R. Rank. 1992. “Inter-Vivos Transfers and Intergenerational Exchange.” *Review of Economics and Statistics* 74:305–314.

- Goranson, R.E., and L. Berkowitz. 1966. "Reciprocity and Responsibility Reactions to Prior Help." *Journal of Personality and Social Psychology* 3:227-232.
- Greenglass, E.R. 1969. "Effects of Prior Help and Hindrance on Willingness to Help Another: Reciprocity or Social Responsibility." *Journal of Personality and Social Psychology* 11:224-231.
- Hirshleifer, J. 1987. "On the Emotions as Guarantors of Threats and Promises." In: J. Dupré (ed.), *The Latest on the Best: Essays in Evolution and Optimality*. Cambridge, Mass.: MIT Press.
- Laitner, J. 1997. "Intergenerational and Interhousehold Economic Links." In: M.R. Rosenzweig and O. Stark (eds.), *Handbook of Population and Family Economics*. Amsterdam: North Holland.
- Mauss, M. 1966. *The Gift*. London: Routledge and Kegan Paul.
- Pemberton, J. 1991. "Risk Aversion, Leisure, and Wage Determination." University of Reading (mimeo).
- Stark, O. 1995. *Altruism and Beyond, An Economic Analysis of Transfers and Exchanges Within Families and Groups*. Cambridge: Cambridge University Press.
- Udry, C. 1994. "Risk and Insurance in a Rural Credit Market: An Empirical Investigation in Northern Nigeria." *Review of Economic Studies* 61:495-526.