Should Gift Giving Be Subsidized?*

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Abstract: Charitable giving in the U.S. is large and pervasive. Two thirds of all households gave charitable gifts in 1995, the sum of which was over $100 billion. Stiglitz (1987), Kaplow (1995, 1998) and others argue that gift giving should be subsidized because it causes a positive consumption externality, but they derive this conclusion in a setting of complete and perfect information. We introduce risk, uncertainty and asymmetric information into the gift giving decision in a simple general equilibrium model. When the source of risk is endogenous with respect to gift giving, we show that the optimal subsidy unambiguously falls, and could become a tax on giving. When gift giving provides nonmarket insurance against endogenous risk, it imposes a negative externality on the market and the market responds by reallocating risk in ways that are inefficient. Our findings demonstrate the importance of considering the market's reaction to gift giving when determining the optimal subsidy.

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Should gift giving, including charitable donations, bequests and inter-vivos transfers, be subsidized by the government? In the *Handbook of Public Economics*, Stiglitz (1987, p. 1035) writes, “Since gift giving increases the utility both of the giver and the receiver, it is doubly blessed in our social welfare function, and the government will seek to encourage it, through a bequest subsidy.” The model of gift giving underlying this conclusion views charitable giving as a person-to-person transfer of income. The benefactor gives a gift either because her utility depends on the gift recipient’s utility, or because the very act of giving provides her with utility. This approach to charitable giving differs from the public-goods approach, which Andreoni (1988) shows to be inconsistent with the empirical facts regarding charitable donations. The idea that benefactors view their charitable gifts, including those to strangers, in terms of a person-to-person transfer of income, not only avoids the troublesome conclusions of the public goods approach but also seems to correspond with reality. Indeed, all that is necessary to support this view of giving is that benefactors imagine that their gifts are conveyed to some individual, the thought of whom arouses pity or concern. Advertisements for organized charities, which routinely use images of needy individuals, seem to be aimed precisely at creating this belief in the minds of potential benefactors.

The person-to-person transfer model of charitable giving does share one conclusion with the public-goods model of giving, which is that gift giving is underprovided in a competitive equilibrium. Friedman (1988) shows that altruistic gift-giving creates a consumption externality in that the giver values only the increase in her own welfare, which is dependent on but distinct from the increase in the recipient’s welfare. A social planner, on the other hand, sees that giving a gift raises both persons’ utility and therefore concludes that gift-giving is underprovided. The appropriate response to the underprovision, as Stiglitz argues, is for the government to subsidize gift giving. Kaplow (1995) calculates the size of this subsidy under full information.

The above papers supporting the conclusion that gift-giving should be subsidized develop their analyses using a partial equilibrium setting with full information. Does the introduction of risk, uncertainty and asymmetric information, particularly in a general equilibrium setting, affect the prescription that gift giving ought to be subsidized? We believe this question is important for three reasons. First, adding uncertainty to the model is important because gift giving is one way that agents engage in risk-sharing behavior such as insuring one another. Gifts are often given to victims of natural disasters, for example, to compensate them for the loss of income and possessions. On the other hand, gifts are also given to compensate people who have low permanent incomes. It is clear, however, that the risk of a natural disaster is not the same as the risk of having a low permanent income. The former risk seems exogenous with respect to individuals' actions (except perhaps to the choice of where to live), while the latter risk depends greatly on the actions of the individual in the labor market. In this paper, we shall refer to the former type of risk as exogenous risk and the latter as endogenous risk. These different types of risk may imply different degrees and forms of risk sharing, from the perspective of a social planner, and hence imply different optimal rates of subsidy.

The consideration of asymmetric information follows immediately from the introduction of risk and uncertainty. It is well known that when the risk being insured against is endogenous in the sense described above, the presence of asymmetric information about the actions taken by the insured leads to moral hazard problems. To the extent that gift giving takes place under these conditions, we should expect moral hazard problems to arise as a result of gift giving. We stated above that at least some gift giving is intended to compensate those who experience bad labor market outcomes and hence have low permanent incomes. In addition, much gift giving is intermediated by charitable organizations such as the Red Cross and the United Way. In this setting, it is reasonable to believe that the givers cannot observe the actions taken by the recipients. Even when gifts pass directly from giver to recipient, there may still be asymmetric information. When parents give gifts to adult children to compensate for poor labor market outcomes or liquidity crises, for example, it is also reasonable to expect that parents cannot observe the actions of their children in the relevant markets. The resulting problem is that the recipient takes advantage of the insurance by engaging in activities that make recourse to the insurance more likely[1].

Finally, the general equilibrium setting acknowledges that gift giving may change incentives and constraints that givers and recipients face in the market. Therefore, gift giving may affect giver and recipient's economic choices and change market outcomes. Such changes will affect welfare and with it the social planner's choice of gift subsidy. In the above example, gift giving's provision of insurance against an endogenous risk leads to a moral hazard problem that alters the recipients' choice of action. Since this action affects (say) the labor market outcome, the labor market will react to the moral hazard by altering equilibrium price and quantity. The change in equilibrium prices and quantities will have direct implications for welfare. One possibility in this situation is that gift giving can actually lower total welfare. But because gift givers and recipients are price takers, they will not act to change their behavior. Only a social planner, who can change the rate of subsidy to gift giving, can remedy such a situation.

By placing the gift-giving decision in a market economy with uncertainty, we can analyze how gift giving affects the allocation of market risk in the economy, and ask whether gift giving should still be subsidized after the full set of economic effects are considered[2]. We proceed by introducing the gift-giving decision into a model in which the gift recipients' incomes are random. Gift giving could be motivated by a desire on the part of givers to insure (compensate)

[1] See, for example, Coate (1995).

[2] Atkinson (1976) considers a similar issue in his model, in which charitable gifts affect recipients' incomes and the "effectiveness" with which charities convert gifts into recipient income affects the choice of tax treatment of charitable giving.

recipients against bad realizations of income. When this income risk is exogenous, we show that the conclusions of Stiglitz and Kaplow still hold: gift giving should be subsidized, and the optimal subsidy is the same as in the certainty case.

But the result changes when we add a labor market with moral hazard and endogenize the income risk[3]. We develop a simple model in which gift recipients work for profit-maximizing firms whose output is random. The probability distribution of output, and hence income, depends on recipients' labor effort, which is private information. Higher labor effort increases the probability of high output and therefore high income, but it also gives disutility to those who expend the effort. Gift recipients will therefore use gift income to reduce their labor effort. As gift giving increases, aggregate labor effort falls and lower output is realized. The market reacts to lower output and profits by altering the wages paid to the gift recipients in a way that lowers their welfare. In this model, gift giving imposes a negative externality on the market. The market responds to this externality by shifting some of the costs imposed on it back onto the gift recipients. A social planner, taking the externality and the market's reaction into account, would not wish to subsidize gift giving as heavily as in the case of exogenous uncertainty. Therefore, we show that the optimal subsidy to gift giving unambiguously falls, possibly to zero or to levels at which the subsidy becomes a tax.

This result is important because it shows that the market reaction to gift giving is an essential factor that must be considered when asking whether gift giving should be subsidized. The market response to gift giving is likely to be significant because gift giving in our economy is pervasive and sizable. The National Commission on Philanthropy and Civic Renewal (1997) reports that in 1995, two thirds of all households gave money to charity. This giving was more than $116 billion, or almost two percent of personal income. Bequests to charities added

[3] Alternatively, we could also use the insurance market, or any market in which information asymmetries are present, to illustrate our argument. See Arnott and Stiglitz (1991).

another \$10 billion. Intrafamily gifts are also diverse and large. These gifts include parental gifts to adult children and other interhousehold gifts as well as bequests and parental gifts to minor chilren. Cox (1987) estimated that the sum of bequests and inter vivos transfers was over 100 billion dollars, while Wilhelm (1996) estimated that bequests alone were over 130 billion dollars in 1988. Given that these figures are at least ten years old, it is reasonable to believe that intrafamily gift giving is significantly greater today.

Our model of the interaction of gift giving and the market, furthermore, corresponds well with the actual circumstances of gift giving in society. Gift transfers are often if not primarily intended to insure their recipients against bad market outcomes, particularly with respect to income or liquidity. Gift transfers therefore represent a significant provision of nonmarket insurance, the presence of which undoubtedly shapes many of the decisions made by the recipients (and potential recipients) of these transfers. In the presence of uncertainty and asymmetric information, the use of nonmarket insurance may lead to or exacerbate moral hazard problems, thereby imposing costs on the market. As our results show, the market reacts to these costs by shifting more risk to the gift recipients. If the market reaction is sufficiently strong, the nonmarket insurance will be offset or even outweighed by the increased risk passed onto the gift recipients by the market. In such a situation, gift and inheritance taxes can be welfare enhancing.

The paper proceeds as follows. First we specify the gift giving decision under certainty. We compare the optimal gift chosen in a decentralized economy with the social planner's optimal gift and derive the optimal subsidy as in Kaplow (1995). Then we introduce risk and uncertainty and examine gift giving when income risk is exogenous. Again we compare the optimal gift chosen in a decentralized economy with the social planner's optimal gift and derive the optimal subsidy. We show that the optimal gift and subsidy in this case are identical to the certainty case. Then we endogenize income risk by introducing a labor market and labor effort into the model while maintaining the positive consumption externality discussed by Atkinson (1976) and Stiglitz (1987). We examine the gift giving decision and show that a social planner would choose a smaller gift in this case than under the certainty case or under exogenous income risk. We also show that the optimal subsidy under endogenous uncertainty is smaller and we discuss the conditions under which the subsidy would become a tax on gift giving. We conclude by discussing the policy implications of our findings.

1 Benchmark Model

We begin with an economy populated by two types of individuals: benefactors and recipients. Benefactors are paired with recipients, toward whom they feel altruistic. That is, the recipient's utility is an argument in the benefactor's utility function.[4] The recipients' utility is a function only of their own consumption. We assume that altruism is asymmetric only for the sake of clarity. Making altruism reciprocal and symmetric will not change the qualitative results of this and subsequent sections, except for a special case that affects the results of Section 4.[5]

We assume that the benefactor's utility function is additively separable and is given by

$$U_b(y_b, u_r(y_r)) = u_b(y_b) + \beta u_r(y_r)$$

where y_b is the benefactor's income, y_r is the recipient's income, $u_r(y_r)$ is the recipient's utility and $0 \leq \beta \leq 1$ is the altruism factor. We assume that $u_i' > 0$ and $u_i'' < 0$ for $i = b, r$.

To motivate gift giving, we assume that $y_b > y_r$, where both are certain. The benefactor

[4] Alternatively, we could motivate gift giving as the "warm glow" that giving imparts to benefactors as in Atkinson (1976) and Andreoni (1990). This specification places the gift itself in the benefactor's utility function so that utility is given by $U_b(y_b, g)$. Doing so would not alter any of the results. See Atkinson (1976, p. 15).

[5] See Bernheim and Stark (1988) and Stark (1993) for the argument that symmetric altruism does not completely resolve conflicts between paired agents.

decides how much to give to the recipient as a gift[6]. Her problem can be written as

$$\max_g u_b(y_b - g) + \beta u_r(y_r + g).$$

The first order condition is

$$-u_b'(y_b - g) + \beta u_r'(y_r + g) = 0. \tag{1}$$

Let g^* denote the optimal gift choice that results from solving (1).

Now consider the social planner's problem. As in Atkinson (1976), the social planner maximizes an explicit social welfare function. The social planner chooses the gift to maximize the following objective:

$$u_b(y_b - g) + (1 + \beta)u_r(y_r + g).$$

Note that the social planner's objective function double-counts the utility of the recipient in the manner suggested by Stiglitz (1987).

The first order condition in this case is

$$-u_b'(y_b - g) + (1 + \beta)u_r'(y_r + g) = 0, \tag{2}$$

which determines the social planner's optimal gift, g_{sp}^*.

Stiglitz and Kaplow have shown that the social planner would choose a larger gift than the one chosen in a decentralized economy.

Proposition 1 *(Stiglitz (1987), Kaplow (1995)):* $g_{sp}^* > g^*$.

Since the social planner would choose a higher gift than the benefactor chooses, the planner would want to subsidize gift giving. The optimal subsidy is the one that would induce the benefactor to behave like the social planner, with respect to the choice of gift. Suppose that

[6] Our specification assumes that gifts are chosen and distributed before any other outcomes are realized. Delaying the choice and distribution of gifts until after other outcomes are realized strengthens our results by inducing the Samaritan's dilemma. See Buchanan (1975) and Bruce and Waldman (1990).

gifts were subsidized at rate s, where the gift is financed by a lump-sum tax that is taken as given by individuals, as in Kaplow (1995, 1998). This reduces the benefactor's cost of giving a gift of size g to $(1-s)g$. The first order condition in this case is

$$-u_b'(1-s) + \beta u_r' = 0. \tag{3}$$

The subsidy that would induce the benefactor to behave like the social planner is one that would make the benefactor's first order condition (3) equivalent to the social planner's first order condition (2). Solving for this s yields[7]

$$s^* = \frac{u_r'}{u_b'} = \frac{1}{1+\beta}.$$

Note here that the higher the degree of altruism β, the lower is the subsidy. That is true because as altruism increases, the benefactors choose to make larger transfers. Altruism leads the benefactor to internalize the consumption externality partially, in the sense that altruism makes the benefactor's private valuation of gift giving approach the social value of gift giving, so a lower subsidy rate is necessary to induce the optimal transfer.

2 Exogenous Uncertainty

Now we consider the case in which the benefactor has a certain income but the recipient faces income risk outside his control. Assume that there is an exogenous probability P that the recipient's income is y_L, whereas with probability $1-P$ the recipient's income is $y_H > y_L$. The benefactor's motivation for gift giving may be to help insure the recipient against the bad outcome y_L, which is certainly true in the case of altruism. The recipient's expected utility, allowing for a gift, is

$$EU_r = Pu_r(y_L+g) + (1-P)u_r(y_H+g).$$

[7]See Kaplow (1995).

Define $u_{rL} \equiv u_r(y_L + g)$, and $u_{rH} \equiv u_r(y_H + g)$. It is clear that $u_{rH} > u_{rL}$. The benefactor's utility function, allowing for gift giving, is

$$U_b = u_b + \beta EU_r = u_b(y_b - g) + \beta \left[Pu_r(y_L + g) + (1 - P)u_r(y_H + g) \right],$$

and her first order condition is

$$-u_b' + \beta \left[Pu_{rL}' + (1 - P)u_{rH}' \right] = 0. \tag{4}$$

The social planner's problem is

$$u_b + (1 + \beta)EU_r = u_b(y_b - g) + (1 + \beta) \left[Pu_r(y_L + g) + (1 - P)u_r(y_H + g) \right],$$

and the first order condition in this case is

$$-u_b' + (1 + \beta) \left[Pu_{rL}' + (1 - P)u_{rH}' \right] = 0. \tag{5}$$

Using conditions (4) and (5), we prove a lemma that says that in the case of exogenous uncertainty, the social planner's gift is greater than that chosen in a decentralized economy.

Lemma 1

$$g_{sp}^* > g^*.$$

Proof: Define the function $F(\theta, g)$ as the following:

$$F(\theta, g) \equiv -u_b' + \beta \left[Pu_{rL}' + (1 - P)u_{rH}' \right] + \theta \left[Pu_{rL}' + (1 - P)u_{rH}' \right] = 0, \tag{6}$$

such that if $\theta = 1$ (6) reduces to (5) whereas if $\theta = 0$ then (6) reduces to (4). Now, $F_\theta = Pu_{rL}' + (1 - P)u_{rH}' > 0$, so $\frac{db}{d\theta} > 0$ by the implicit function theorem, which implies $g_{sp}^* > g^*$. ∎

Again the fact that the social planner's gift is larger than the private gift implies that we can calculate an optimal subsidy. Subsidizing the benefactor's giving would again reduce the cost of a gift to $(1-s)g$ so that the first order condition is now

$$-(1-s)u_b' + \beta\left[Pu_{rL}' + (1-P)u_{rH}'\right] = 0. \tag{7}$$

The optimal subsidy is once again the s that makes the benefactor's first order condition (7) equivalent to the social planner's first order condition (5):

$$s^* = \frac{Pu_{rL}' + (1-P)u_{rH}'}{u_b'} = \frac{1}{1+\beta}. \tag{8}$$

Thus, the optimal subsidy in the case where the risk facing the recipient is exogenous is the same as in the certainty case.

3 Endogenous Risk

Now we endogenize the income risk faced by the recipients by making their income depend on the amount of labor effort they choose to expend. We also introduce a labor market with moral hazard into the analysis. Introducing the labor market facilitates the endogenization of income risk, but it also serves an important role in the analysis. The labor market aggregates the effects of recipients' choices and then transmits the results back to the recipients, in the form of wages. We know that gift giving will affect the recipients' choice of effort level. While the individual recipient is a price taker, collectively the recipients' actions change the equilibrium wages in the labor market. In particular, in the presence of gift giving, new equilibrium wages will be established that represent a reallocation of risk away from risk-neutral firms and toward the risk-averse recipient-workers, which is inefficient. In order to correct this inefficiency, a social planner would want to reduce the gift subsidy or even convert it into a tax on gift giving.

Suppose that the recipients enter the labor market for a single period and supply labor to firms. Output can be high (x_H) or low (x_L). The probability that the low-output state occurs is $P(e)$, where e is the worker's effort, which is unobservable to both the firm and the benefactor; we assume $P' < 0$ and $P'' > 0$. Wages are y_L in state L and y_H in state H, where $y_L < y_H$. The difference in wages across states of nature reflects the moral hazard in the labor market. Also, risk aversion on the part of recipients implies that $y_L > x_L$ and $y_H < x_H$.

Competitive labor and output markets dictate that y_L and y_H will maximize expected profits, while competition drives expected profits to zero. Hence

$$E\pi(y_L, y_H; e) = P(e)x_L + (1 - P(e))\, x_H - [P(e)y_L + (1 - P(e))\, y_H] = 0. \tag{9}$$

The recipient's expected utility is now

$$EU_r = Pu_{rL} + (1 - P)u_{rH} - v(e),$$

where $v(e)$ is a strictly convex function reflecting the recipient's disutility of effort, and u_{rL}, u_{rH} are defined as above. The recipient now has a choice to make: he chooses effort to maximize utility. The first order condition for the recipient is

$$P'[u_{rL} - u_{rH}] - v'(e) = 0, \tag{10}$$

which gives $e^* = e(y_L, y_H, g)$. It is easy to show[8] that $\frac{\partial e^*}{\partial y_L} < 0$, while $\frac{\partial e^*}{\partial y_H} > 0$. The impact of gift transfers on the optimal choice of effort by the recipient is

$$e_g^* \equiv \frac{\partial e^*}{\partial g} = -\frac{P'[u'_{rL} - u'_{rH}]}{P''[u_{rL} - u_{rH}] - v''(e)} < 0. \tag{11}$$

Equation (11) shows how gift giving affects the incentives, and hence the choice of effort, of the recipient. The gift essentially provides insurance against low output, so the recipient lowers

[8] Please refer to the Appendix for details.

the effort he puts into avoiding the low output state. In other words, the recipient uses the income from the gift to effectively purchase a reduction in labor effort[9]. This reflects the moral hazard problem between the benefactor and the recipient.

If instead the model were symmetric in that both the giver and recipient were equally altruistic and both faced the same income risk, then the magnitude of the response of effort to gift giving would be reduced. But the moral hazard would not be eliminated except in the special case of $\beta = 1$ for both giver and recipient. In this case, each agent values the other's utility as his own and completely internalizes the effects of his actions on the other. As a result, the moral hazard between giver and recipient completely disappears and there is no reduction in effort by the recipient as a result of gift giving. So long as $\beta < 1$, however, gift giving will reduce effort.

The benefactor's expected utility, EU_b, is

$$EU_b = u(c_b) + \beta \left[P u_{rL} + (1 - P) u_{rH} - v(e) \right],$$

where $c_b = y_b - g$ is the benefactor's net consumption, y_b is her (exogenous) income, and g is the gift to her beneficiary. The first order condition for the gift-giving decision is[10]

$$-u'_b + \beta \left\{ \left[P'(u_{rL} - u_{rH}) - v'(e^*) \right] e^*_g + \left[P u'_{rL} + (1 - P) u'_{rH} \right] \right\} = 0,$$

and using the envelope condition to substitute out condition (10), the above condition reduces to

$$-u'_b + \beta \left[P u'_{rL} + (1 - P) u'_{rH} \right] = 0, \tag{12}$$

which yields $g^* = g(y_b, y_L, y_H; e^*, \beta)$. It is straightforward to show that higher altruism leads

[9]Holtz-Eakin *et al* (1993) show in an empirical study that labor supply and labor force participation drop as a result of large inheritances.

[10]Alternatively, we could choose to make the gift state-contingent so that the gift is g_L in the low output state and g_H in the high output state. Doing so does not affect any of the qualitative results presented below.

to higher tranfers, $g^*_\beta \equiv \frac{\partial g^*}{\partial \beta} > 0$, and that higher wages in either state lead to lower transfers: $g^*_L \equiv \frac{\partial g^*}{\partial y_L} < 0$, and $g^*_H \equiv \frac{\partial g^*}{\partial y_H} < 0$.[11]

Notice that so far we have shown that higher altruism on the part of givers leads to larger gifts, and that larger gifts in turn induce lower labor effort on the part of recipients. We also know that lower effort increases the probability of realizing the low output state. Now we want to show how the market reacts to the presence of gift giving. In other words, given e^*, g^*, and the conditions derived above, we examine the impact of increases in β on the equilibrium wage contract.

The equilibrium wage contract is shaped by two forces: the zero expected profit condition in the output market and the preferences of the recipients. Firms are willing to pay any combination of wages that satisfies the zero-profit condition. Therefore, the zero-profit condition specifies the relationship between the wages in the two states of nature, or in other words, the dispersion between y_L and y_H. The preferences of the recipients then specify the general level of wages. To make this concrete, we shall have the recipients choose y_L. Thus the recipient faces the following problem:

$$\max_{y_L} EU_r = P(e)u_r(y_L + g) + (1 - P(e))u_r(y_H + g) - v(e)$$

subject to

$$\begin{aligned} e^* &\quad \text{argmax} \quad E(U_r), \text{ according to (10)}, \\ g^* &\quad \text{argmax} \quad E(U_b), \text{ according to (12)}, \\ (y^*_L, y^*_H) &\quad \text{argmax} \quad E(\pi^*) = 0, \text{ according to (9)}. \end{aligned}$$

Taking the first order condition yields

$$Pu_{rL}\left(1 + \frac{\partial g^*}{\partial y_L}\right) + (1 - P)u_{rH}\left(\frac{dy^*_H}{dy_L} + \frac{\partial g^*}{\partial y_L}\right) - v'\frac{\partial e^*}{\partial y_L} + (u_{rL} - u_{rH})\frac{P'\partial e^*}{\partial y_L} = 0. \qquad (13)$$

[11] Please refer to the Appendix for the details.

Substituting the recipient's first-order condition (10) into (13) yields

$$Pu_{rL}\left(1+\frac{\partial g^*}{\partial y_L}\right)+(1-P)u_{rH}\left(\frac{dy_H^*}{dy_L}+\frac{\partial g^*}{\partial y_L}\right)=0. \tag{14}$$

The above first order condition tells us that the recipient will participate in the labor market only if $\left|\frac{\partial g^*}{\partial y_L}\right|<1$. That is, the recipient will choose a nonzero wage and enter the labor market only if gifts offset lost wages by less than one for one. To see this, first note that rearranging the zero-profit condition (9) yields

$$y_L = x_L + \frac{(1-P)}{P}[x_H - y_H],$$

which implies that

$$\frac{dy_L}{dy_H} < 0.$$

In addition, we know from above that $g_L^* \equiv \frac{\partial g^*}{\partial y_L} < 0$. Thus, the second term in equation (14) is negative, so in order to obtain an interior solution for the wage in the low state, we must have $\left|\frac{\partial g^*}{\partial y_L}\right|<1$. Otherwise, the recipient will choose $y_L^* = 0$ and will not participate in the labor market. This makes intuitive sense, since if the benefactor will offset a one-dollar negative income shock to the recipient by more than one dollar, then the risk-averse recipient is clearly better off not working at all[12].

Equation (14) also lets us see the impact of altruism on wage dispersion. In the Appendix, we use this condition to show that

$$\frac{dy_L^*}{d\beta} < 0. \tag{15}$$

If we combine expression (15) with the fact from above that $\frac{dy_L}{dy_H} < 0$, this shows that the market responds to an increase in gift giving by lowering the wage in the low-output state and raising it in the high-output state. What happens is that gift giving lowers work effort,

[12]Note that by substituting (9) into the recipient's utility and allowing the recipient to choose y_L, we ensure that the recipient does not receive more than his reservation utility.

which increases the probability of a bad realization of output. This puts downward pressure on firm profits, which results in a lowering of y_L and a raising of y_H in order to maintain the zero-profit condition. The moral hazard problem between givers and recipients exacerbates the moral hazard problem that already exists between recipients and firms. In other words, gift giving imposes a negative externality on the labor market. Individual benefactors and recipients are price takers, so they do not internalize this effect on the labor market. But the market aggregates their responses to gift giving and thus equilibrium prices and quantities change.

The market responds to the negative externality in gift giving by reallocating risk in a way that is detrimental to the gift recipients. The increased dispersion between the high wage and the low wage is an increase in the recipient's market income risk. The market has transferred risk from risk-neutral firms to risk-averse individuals, which is inefficient.

We illustrate these welfare effects in Figure 1. Figure 1a depicts the market equilibrium in the absence of gift giving, which is characterized by the moral hazard problem. U_r is the recipient's indifference curve, which has slope given by $\frac{dy_H}{dy_L} = -\frac{Pu'_L}{(1-P)u'_H}$. Full insurance for the recipient lies along the 45 degree line, where $\frac{dy_H}{dy_L} = -\frac{P}{1-P}$. The wage contract is constrained to lie on the firm's zero-profit line ZPL, whose slope is given by

$$\frac{dy_H}{dy_L} = \frac{-P + (x_L - y_L)P' \frac{\partial e^*}{\partial y_L}}{1 - P + (x_H - y_H)P' \frac{\partial e^*}{\partial y_H}}.$$

The equilibrium is found at point A, which is the tangency between U_r and ZPL. Because of the moral hazard, the slope of ZPL at point A is steeper than $\frac{P}{1-P}$, which implies that the recipient is less than fully insured against income risk. The price-taking recipient would therefore like to purchase insurance if the price is less than or equal to $\frac{P}{1-P}$, and would welcome a gift because it provides "free" insurance.

As Figure 1b shows, however, the market equilibrium with gift giving does not necessarily make the recipient better off. Let point B in Figure 1b represent the market equilibrium without gift giving. The introduction of gift giving has two effects on the figure. First, by lowering effort (recall $\frac{\partial e^*}{\partial g} < 0$), gift giving increases the recipient's utility at every given wage contract (y_L, y_H). This effectively increases the level of utility associated with each indifference curve (or shifts the recipient's indifference map to the left). The second effect is that gift giving decreases firm profits at each given wage contract. As we showed above, the presence of gift giving lowers the recipients' effort, raising the probability of realizing low output in production. The effect on the firm's profitability is represented in Figure 1b by shifting the firm's zero-profit line in toward the origin from ZPL to ZPL_1. Thus, the contract given by point B is no longer feasible. Because the zero-profit line has shifted to ZPL_1, the equilibrium is now at point C. At point C, the wage contract features a higher value of y_H and a lower value of y_L. In other words, risk has been reallocated toward the gift recipient in the form of higher wage dispersion. The increased risk of the new equilibrium is associated with a lower indifference curve, U_r^2. The move from U_r^1 to U_r^2 is a welfare loss that may offset the welfare gain from the gift.

As we see next, a social planner would take the change in risk allocation into consideration when choosing the socially optimal gift. Assume that the social planner chooses g, y_L, and y_H in order to maximize the social objective function

$$u_b + (1+\beta)EU_r,$$

subject to

$$e^* \quad \text{argmax} \quad E(U_r), \text{ according to (10)},$$

$$(y_L^*, y_H^*) \quad \text{argmax} \quad E(\pi^*) = 0, \text{ according to (9)}.$$

We are only interested in the planner's choice of gift. Differentiating the social planner's objective function with respect to the gift yields[13]

$$-u_b' + (1+\beta)\left\{\left(P'[u_{rL}' - u_{rH}'] - v'(e^*)\right)e_g^* + Pu_{rL}'[1 + \frac{\partial y_L^*}{\partial g}] + (1-P)u_{rH}'\right\} \tag{16}$$

where $\frac{\partial y_L^*}{\partial g} = -(x_H - y_H)\frac{P' e_g^*}{P^2} < 0$.

Now we prove that the social planner chooses a lower gift in this case, relative to the case in which the risk is exogenous. Let g_E^* be the optimal gift that the social planner chooses in condition (5), where risk is exogenous. Then we have the following result:

Proposition 2 $g_{sp}^* < g_E^*$

Proof: Using equation (10) to substitute the recipient's first order condition out of (16), conditions (5) and (16) can be nested together as

$$F(\theta, g) \equiv -u_b' + (1+\beta)\left[Pu_{rL}' + (1-P)u_{rH}'\right] + \theta(1+\beta)Pu_{rL}'\frac{\partial y_L^*}{\partial g} = 0,$$

where $\theta = 1$ returns condition (16) and $\theta = 0$ returns condition (5). It is clear that $F_\theta = (1+\beta)Pu_{rL}'\frac{\partial y_L^*}{\partial g} < 0$, which implies that $\frac{dg}{d\theta} < 0$. Thus, $g_{sp}^* < g_E^*$. ■

The above result is driven by the market's response to the introduction of endogenous risk and the accompanying negative externality. The social planner takes into account the market reaction to the negative externality caused by gift giving, which is the depressive effect of gifts on y_L. This reaction to the negative externality at least partially offsets the positive externality embodied in the double counting of recipient utility in the social planner's objective function. Thus gift giving is no longer as "blessed" in the social planner's objective, and the optimal gift is reduced relative to the exogenous uncertainty and perfect foresight cases.

The question raised by this result is how much the welfare effects of the negative externality offset the double counting effect. That is, do conditions exist under which the negative externality dominates the positive externality so that the subsidy disappears?

[13] See Arnott and Stiglitz (1991) for a similar treatment in the insurance market.

We rewrite the social planner's first order condition (16) to answer this question. Using the envelope condition to substitute out condition (10) gives

$$-u_b' + (1+\beta)\left[Pu_{rL}'\left(1+\frac{\partial y_L^*}{\partial g}\right) + (1-P)u_{rH}'\right] = 0. \tag{17}$$

If the term inside the brackets were negative, then the social planner would want gift giving to vanish. We know that due to the moral hazard in market, the recipient is not fully insured, so that $u_{rH} > u_{rL}$ and $(1-P)u_{rH}' < Pu_{rL}'$. We also know that $\frac{\partial y_L^*}{\partial g} < 0$. Therefore, if the reaction of y_L^* to gift giving is strong enough–well over unity in absolute value–then it is possible for the term in brackets to be negative. While this does not seem likely, it may still be possible that the market reaction to gift giving is sufficiently strong to make (17) negative. That is, if the market response offsets the gift sufficiently, then the loss in utility from gift giving would outweigh the gain and the social planner would not want to subsidize gift giving. In fact, the social planner may want to tax gift giving if certain conditions hold.

To obtain a clearer picture of the conditions under which the subsidy would become a tax, we derive the optimal subsidy in the endogenous risk case. The first order condition for subsidized gift giving is

$$-(1-s)u_b' + \beta\left[Pu_{rL}' + (1-P)u_{rH}'\right] = 0.$$

Solving for the optimal subsidy using (17) yields

$$s^* = \frac{1}{1+\beta} + \beta P \frac{u_{rL}'}{u_b'}\frac{\partial y_L^*}{\partial g}. \tag{18}$$

Note that the optimal subsidy in the endogenous risk case is equal to the subsidy from the exogenous risk case, plus an additional term that is negative. In the case of exogenous risk, the subsidy fell as β increased because less subsidy was needed to obtain the social benefit from the positive externality. In the endogenous risk case, this effect is still present, but the subsidy also falls because as β increases, the negative term capturing the market response to the negative externality gets larger also. This directly reduces the size of the optimal gift, so a lower subsidy is needed to induce it. As above, the interaction of altruism and the response of the market to gift giving will determine whether the optimal subsidy is positive, zero, or negative (a tax)[14]. The higher the level of altruism, and the stronger the market response to gift giving, the lower the subsidy will be.

4 Calibration and Policy Implications

A useful way to compare the differing prescriptions for gift giving that arise from this paper is to perform a simple calibration exercise that calculates the size of the optimal subsidy for various parameter values. Figure 2 graphs the optimal subsidy in equation (18) as a function of the altruism parameter β, for varying choices of the market response to gift giving, $\frac{\partial y_L^*}{\partial g}$. Each line in the Figure corresponds to a progressively higher magnitude of $\frac{\partial y_L^*}{\partial g}$, beginning with the certainty or exogenous risk case of $\frac{\partial y_L^*}{\partial g} = 0$, which corresponds to the subsidy calculated by Kaplow (1995).

The remaining parameters P and $\frac{u_r'}{u_b'}$, which are held constant over all calculations, were chosen in the following way. The probability of realizing a bad output state was calculated as the average time spent in recession relative to time spent in expansion during the period 1945-1996, using NBER's business cycle dates. This number, about 1/6, represents the probability that any given month will be a recessionary month. The ratio of marginal utilities was calculated using the constant relative risk aversion (CRRA) utility function $u(c) = \frac{c^{1-\gamma}}{1-\gamma}$ with risk aversion parameter γ set equal to four. This value corresponds to estimates in the finance literature

[14] Alternatively, using a social welfare function of the form $u_b + \beta E U_r$ strengthens the result in the sense that the subsidy unambiguously becomes a tax.

and represents a moderate level of risk aversion[15]. The marginal utility of the recipient was calculated assuming a consumption level equal to the 20th percentile of household income ($14,768), while the marginal utility of the benefactor was calculated assuming a consumption level equal to the median household income ($35,492). These statistics are from the Bureau of the Census (1998).

Figure 2 demonstrates the response of the optimal subsidy to the presence of endogenous risk. The uppermost line on the graph represents the certainty or exogenous risk case, in which the subsidy is given by $\frac{1}{1+\beta}$. As the market response to gift giving increases, representing a greater presence of endogenous risk, the optimal subsidy falls further beneath this benchmark. The market response in Figure 2 varies from 0 to -1.25, with a value of -1.0 indicating that, at the margin, the market reduces the wage in the bad state by one dollar for every dollar of gift given. The choices of $\frac{\partial y_L^*}{\partial g}$ are illustrative rather than definitive. It is possible that the market's response to gift giving is stronger than the values used in the graph.

The figure also shows that for sufficiently high values of β and $\frac{\partial y_L^*}{\partial g}$, the optimal subsidy does become a tax. The subsidy function is bounded away from zero for all values of β as long as the market response to gifts stays between 0 and -0.5, but for stronger market reactions, the subsidy may become a tax for high levels of altruism. It is important to keep in mind that the position of the curves depends on the particular values of the probabilility, consumption, and risk aversion parameters discussed above. If the probability of a bad output realization, the level of risk aversion or the difference in consumption between benefactor and recipient were increased, the levels of altruism and market reaction necessary to generate an optimal gift tax would decrease. All of the underlying parameters, including the labor market response to gift giving and the level of altruism, should be carefully estimated before choosing an appropriate

[15]Given a risk-aversion parameter of 4, the median-income household would value a 50-50 gamble with payoffs of $0 and $1000 at $486.11. A risk-neutral household would value the gamble at its expected value of $500.

subsidy for gift giving.

The calibration exercise also helps to visualze the policy implications of our argument for gift giving subsidies. One intriguing policy implication of this argument is that it is possible that some types of gift giving should be subsidized, while other types should be taxed. In equation (18), we show that in general, gift giving should be subsidized, but the subsidy declines as the level of altruism increases and the market response to gift giving strengthens. If we separate gift giving to strangers from gift giving to family, we may find that the subsidy in equation (18) takes on different values for these different groups. First, it is reasonable to expect that individuals have a higher level of altruism for family members than for strangers. In the case of the spousal or parent-child bond, the value of β may be close to unity[16]. Second, the value of gift transfers between family members appears to be larger than gift transfers to strangers through charities. Using Figure 2 to illustrate this, these two conditions might imply that the optimal subsidy for intrafamily gifts lies at point A, with a high level of β and a stronger market reaction to this type of transfer, while the optimal subsidy for gifts to strangers lies at point B, with a low level of β and a weaker market reaction to gifts. In this example, the negative externality of gift giving dominates the positive externality for intrafamily gift giving, while the opposite is true for gift giving between strangers. Such a situation would imply that gifts to strangers, perhaps through organized charities, should be subsidized, while intrafamily gifts should be taxed.

The subsidy plan described above corresponds well with the actual gift subsidies and taxes in the present U.S. income tax code. Gifts to charity, both in cash and in kind, are subject to a subsidy equal (for those who itemize their income tax deductions) to the marginal income

[16]In the case of the parent-child bond, the altruism is likely to be reciprocal or close to reciprocal. As we indicate above, reciprocal altruism would increase effort over the case of asymmetric altruism, but it would not eliminate the moral hazard problem.

tax rate faced by the benefactor. This rate ranges between 15 and roughly 40 percent. On the other hand, gifts from parents to children are taxed if they are large enough–over $20,000 for a gift from two parents and $10,000 for a gift from a single parent. The giver of the gift is taxed in this case. It is interesting to note that gifts to strangers are subsidized beginning with the first dollar of gift, while gifts to children are taxed only if they exceed a certain threshold. This aspect of the tax scheme can also be justified if we assume reciprocal altruism on the part of children, with high levels of β. High and reciprocal altruism will lower the effect that gifts have on the choice of effort because the recipient will internalize much of the impact of the gift on the giver. In this situation, gifts will not lower the recipient's effort unless the gift is very large. The market reaction to gift giving, therefore, may not become significant until gifts become very large, which implies that only large gifts should be taxed.

A related point that should be made is that this argument presents a justification for certain types of gift taxes based on efficiency, rather than equity. The source of the inefficiency is the information asymmetry, which is exacerbated by the presence of gift giving. If gift giving creates significant market reactions of the type outlined in this paper, then gift taxes are a way of improving the allocation of risk in the economy. Again, given the nature and size of intrafamily gift giving, the gift taxes most likely to be justified by this type of argument are taxes on large gifts to family members, such as inheritance taxes. Careful empirical study is necessary before any such taxes can be justified on these grounds or optimal tax rates calculated, however.

5 Conclusion

When considering whether gift giving should be subsidized, it is essential to understand how gift giving affects the market allocation of risk. We have shown that there may exist negative externalities to gift giving when risk is endogenous, and that these externalities beget market responses that reduce welfare. When such a situation exists, a social planner would want to reduce or possibly eliminate any subsidies to gift giving. As we state in the introduction, we believe that the endogenous risk scenario most closely resembles the circumstances of gift giving in our economy. Consequently, a closer examination of the effects of gift giving on other economic choices must be a part of any evaluation of subsidies to gift giving. The current subsidies and taxes on gift giving present in the U.S. income tax code can be justified if we believe that giving to strangers has different characteristics than giving to family members. This raises an interesting empirical question regarding gift giving that merits investigation.

We wish to emphasize that the results presented in this study are robust to changes in the specification and timing of the model. As mentioned above, a symmetric model (both in terms of altruism and risk) does reduce the magnitude of $\frac{\partial e^*}{\partial g}$ in the endogenous risk case, but it does not eliminate this effect unless $\beta = 1$. It does not seem likely that even the closest family ties imply this level of altruism. In addition, making the gifts state contingent will not alter the results presented in this paper. Since the giver is altruistic at the margin, the gift given in the bad state would exceed that given in the good state, which would make the recipient reduce effort. The moral hazard in gift giving is also exacerbated if the giver's decision is delayed until after the state of nature is revealed.

An interesting issue raised by this and other related papers is whether mechanisms can be devised to overcome the moral hazard problem in gift giving. Arnott and Stiglitz (1991) suggest "peer monitoring" for insurance markets, in which pairs or groups of insured agents with a common bond such as marriage or family ties observe each other's actions at a lower cost than an insurance company does. Although there are cases in which this practice can be implemented in gift giving[17], most often the costliness of monitoring in gift giving prevents both organized charities as well as individual givers from using this strategy. An alternative mechanism that may hold some promise is the building up of trust between givers (or their agents, in the case of charitable giving) and recipients. Economists are beginning to examine trust as a mechanism that resembles reciprocal altruism in its effects but is distinct from altruism in that it is not a fixed or predetermined preference but the changeable outcome of interactions between agents. If investing in trust is significantly less costly than monitoring, then perhaps this mechanism is a solution to the moral hazard problem. It is a proposition worth investigating further.

[17] Habitat for Humanity, for example, uses peer monitoring as part of its distribution criteria.

Appendix

This Appendix derives and signs the partial derivatives governing the responses of effort, gifts, and wages mentioned in the text.

A.1 Effort

¿From the first-order condition for the recipient, equation (10), we obtain

$$\begin{aligned} e_g^* \equiv e_1^* \equiv \frac{\partial e^*}{\partial g} &= -\frac{(u'_{rL} - u'_{rH})P'}{(u_{rL} - u_{rH})P'' - v''} < 0 \\ e_2^* \equiv \frac{\partial e^*}{\partial y_L} &= -\frac{u'_{rL}P'}{(u_{rL} - u_{rH})P'' - v''} < 0 \\ e_3^* \equiv \frac{\partial e^*}{\partial y_H} &= -\frac{u'_{rH}P'}{(u_{rL} - u_{rH})P'' - v''} > 0. \end{aligned}$$

A.2 Gift Giving

To find the derivatives of gift giving with respect to altruism and wages, we first find and sign the denominator of the partial derivatives. Writing out the second order condition for the benefactor's choice of gift gives

$$\Delta \equiv \frac{\partial^2 EU_b}{(\partial g)^2} = u''_b + \beta \left\{ P'(e^*) \left[u'_{rL} - u'_{rH} \right] e_1^* + P(e^*) \left[\beta u''_{rL} \right] + (1 - P(e^*)) \left[\beta u''_{rH} \right] \right\}.$$

Rearranging terms, we have

$$\frac{\partial^2 EU_b}{(\partial g)^2} = \beta P u'_{rL} \left\{ \frac{P' e_1^*}{P} + \frac{u''_{rL}}{u'_{rL}} \right\} - P' e_1^* u'_{rH} + u''_b + \beta(1 - P) u''_{rH}.$$

Note that all the terms save the one in braces are negative. Thus, a sufficient condition for the concavity of the benefactor's surplus function is

Assumption 1

$$\frac{-u''_{rL}}{u'_{rL}} > \frac{P' e_i^*}{P} \textit{ where } i = 1, 2.$$

The above assumption implies that a sufficient condition for an interior solution to the benefactor's problem is that the beneficiary be sufficiently risk averse, such that the direct impact of a change in his wealth on his marginal utility of income, in the bad state, exceeds the indirect impact of wealth on the probability of a low output occurring through its effect on the beneficiary's effort.

To sign the derivative of g^* with respect to β, differentiate the first-order condition for the benefactor (12):

$$\frac{dg^*}{d\beta} = \frac{-\left[Pu'_{rL} + (1-P)u'_{rH}\right]}{\Delta} > 0.$$

Similarly, for the derivative of g^* with respect to y_H, we have

$$\frac{\partial g^*}{\partial y_H} = \frac{-\beta\left[(1-P)u''_{rH} + (u'_{rL} - u'_{rH})P'e^*_3\right]}{\Delta} < 0.$$

Finally, for the derivative of g^* with respect to y_L, we have, using the above concavity assumption,

$$\frac{\partial g^*}{\partial y_L} = \frac{-\beta\left[Pu''_{rL} + (u'_{rL} - u'_{rH})P'e^*_2\right]}{\Delta} < 0.$$

A.3 Wage Dispersion

To find the response of wage dispersion to changes in altruism, we first define $\Gamma < 0$ to be the second order condition for an optimal $y^*_L > 0$. Then we substitute $\frac{-P}{1-P}$ for $\frac{dy_H}{dy_L}$ in the recipient's first order condition with respect to the wage choice, equation (14), and rearrange terms:

$$P(u_{rL} - u_{rH}) + \left[Pu_{rL} + (1-P)u_{rH}\right] g^*_L = 0.$$

Applying the implicit function theorem yields

$$\frac{dy_L}{d\beta} = -\frac{1}{\Gamma}\left[\left(P(u''_{rL} - u''_{rH}) + (u'_{rL} - u'_{rH})P'e^*_g g^*_\beta\right)(1 + g^*_L) + (Pu'_{rL} + (1-P)u'_{rH})g^*_{L\beta}\right]$$

where $g^*_{L\beta}$ is the cross-partial derivative of g^* taken first with respect to L and then β. Note that by the concavity assumption in Section A2 above, $|g^*_L| < 1$. If we further assume that $g^*_{L\beta} < 0$, then it follows that $\frac{dy^*_L}{d\beta} < 0$. This assumption amounts to saying that as altruism increases, the giver makes even larger gifts to the recipient in response to a given fall in y_L. This appears to be a reasonable result of an increase in compassion.

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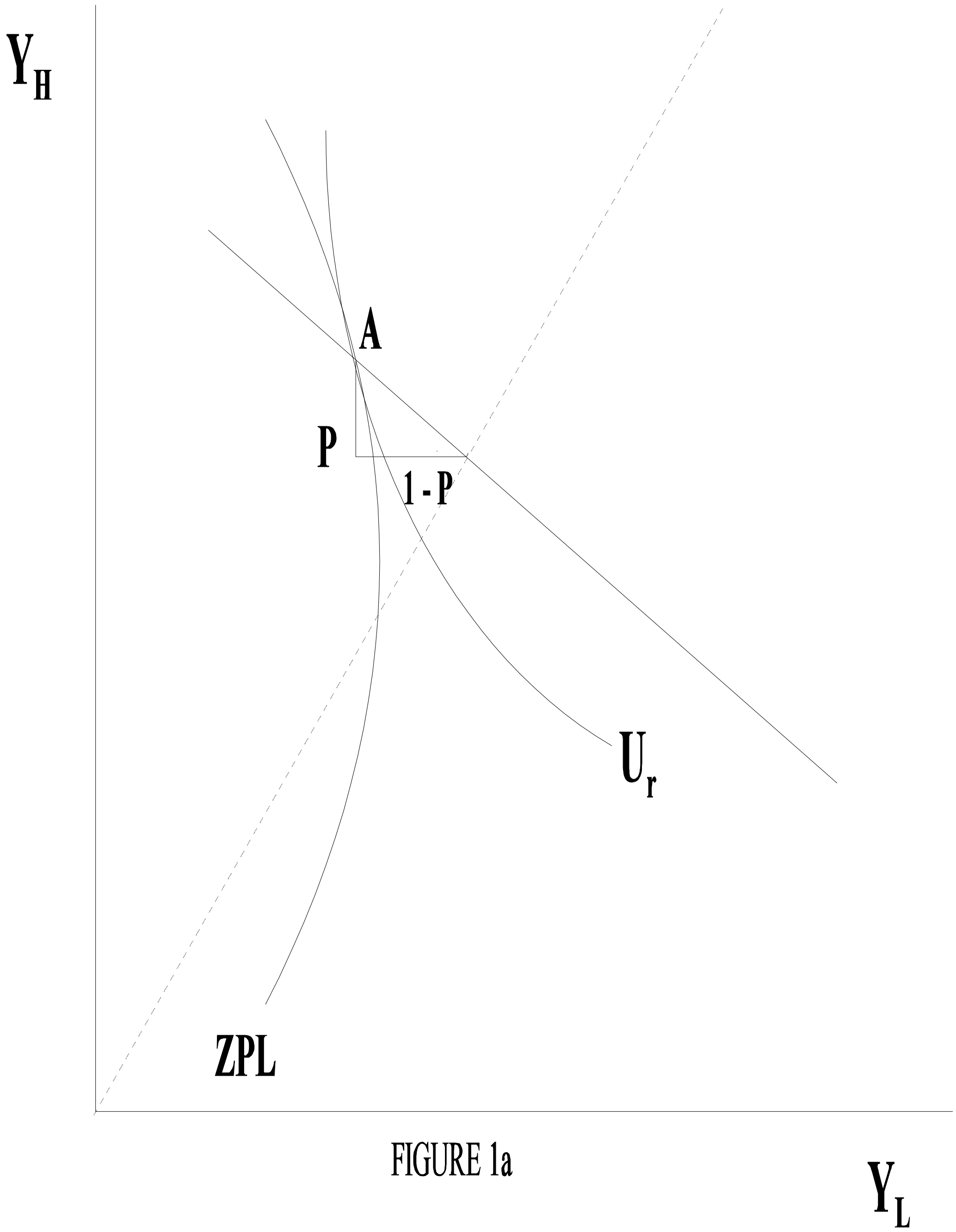

FIGURE 1a

MARKET EQUILIBRIUM WITH MORAL HAZARD

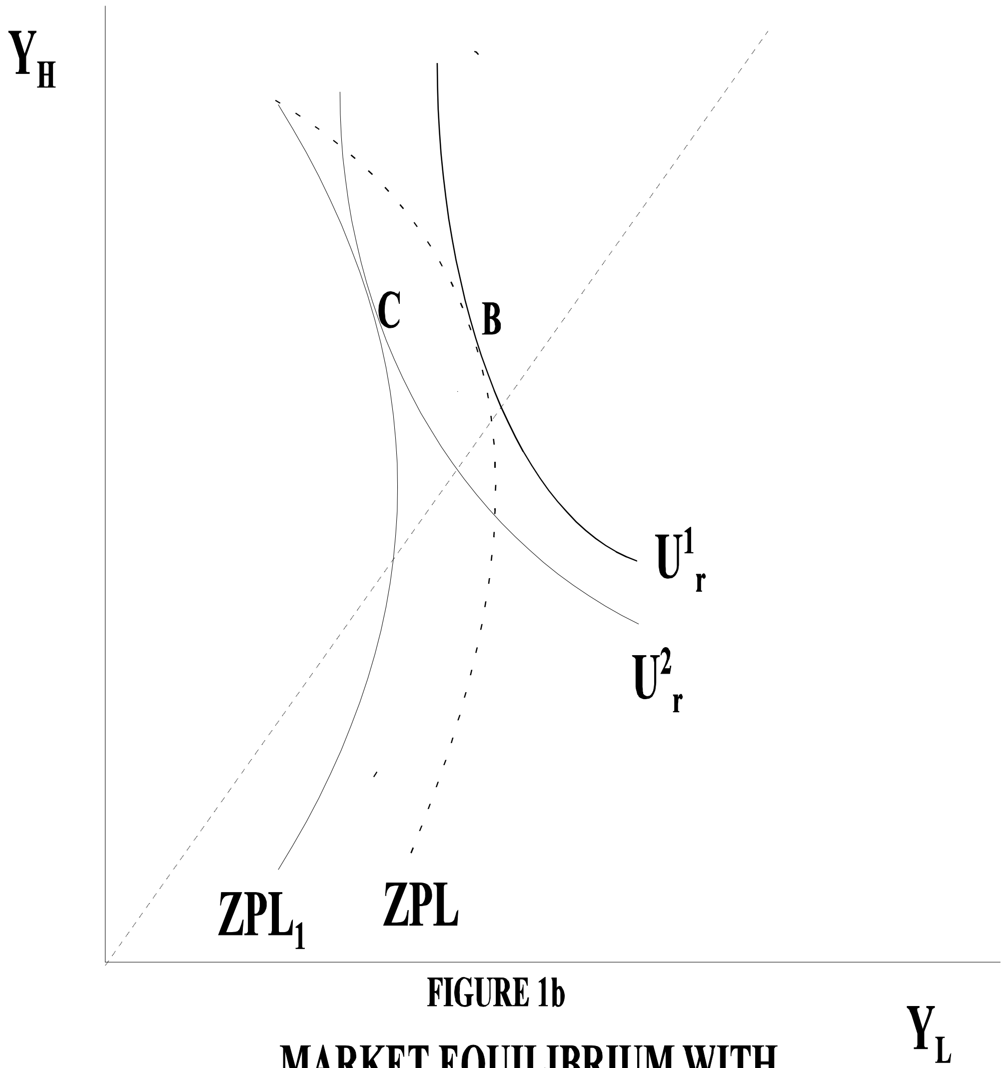

FIGURE 1b

MARKET EQUILIBRIUM WITH
GIFT GIVING

Figure 2
Optimal Gift Subsidy as Altruism and Market Reaction to Gift Giving Vary