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How do altruistic parental transfers affect the welfare gains of marriage?

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Abstract

This paper analyses the effects of altruistic parental transfers on the welfare gains of marriage. To that end, it develops a sequential game which, in a first stage, determines the optimum level of the transfer between the altruistic donor (the parent) and the recipient (the daughter/son). In the second stage, the levels of consumption and provision of a family good are deduced by way of a Nash bargaining solution, with the threat point being represented by divorce. We find that the degree of altruism of the recipient has a null effect on the gains in welfare derived from the marriage by the recipient's spouse, and a positive effect on those derived by the recipient. Additionally, the degree of altruism of the donor has a positive effect on the gains in welfare derived from the marriage by the recipient's spouse, and an ambiguous effect on those derived by the recipient.

Keywords: Altruism; Transfers; Welfare; Marriage

1. Introduction

It is generally accepted that the microeconomic analysis of family decisions has its origins in the household members' consensus model of Samuelson (1956). Some years later, Becker (1973, 1974) considered that the family includes a benevolent individual whose preferences represent the family utility. Under this Beckerian hypothesis, the family allocation is obtained from the maximization of the utility of the representative individual, subject to a family budget constraint. However, this approach ignores one important aspect, namely the intra-family bargaining of resources. This deficiency was corrected by the appearance of the family bargaining models, whose origins can be found in Manser and Brown (1980), and McElroy and Horney (1981). These models consider family decisions as a result of a cooperative game, in such a way that the spouses with heterogeneous preferences and interests try to resolve their differences and conflicts by way of some bargaining mechanism, habitually the Nash bargaining solution.

One important feature of this approach is that the behaviour of the household depends not only on total family resources, but also on those controlled individually by each family member. The control of resources by each member

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is a crucial element in the bargaining process, the results of which depend on the threat point, with this having traditionally been identified with divorce (Manser and Brown, 1980; McElroy and Horney, 1981). However, divorce is not the only threat point that is possible in a family bargaining model. More recently, for example, a number of papers have appeared in which the threat point is defined by a non-cooperative equilibrium that does not necessarily imply the dissolution of the marriage (Lundberg and Pollak, 1993; Chen and Woolley, 2001).

The literature has also devoted some interest to the effects on family allocation of certain policies that suppose transfers from one member of the family to another. In fact, transfers between parents and children have obvious family allocation effects and its study has given rise to a body of research, the so-called inter-generational transfer models (Laferrère and Wolff, 2004; Cox, 1987) although this has been limited to analysing the inter-relationships between parents and children from the exclusively individual point of view.[1]

Against this background, this paper combines two approaches that the literature has traditionally regarded as independent: on the one hand, the family bargaining models and, on the other, the inter-generational transfer models. In fact, our model extends the analysis of inter-generational transfers by considering a situation where the recipient takes her/his decisions within the family by way of bargaining with her/his spouse. In particular, we assume a transfer between the altruistic donor (the parent) and the recipient (the daughter/son), with the main difference being that the latter is also altruistic with respect to the donor. The modelling of a two-stage sequential game under perfect information allows us to analyse the effects of parental altruism on the welfare derived from the recipient's marriage.

2. The model

Let us consider that an altruistic parent (the donor) makes a transfer to the daughter/son (the recipient). This individual, who is also altruistic with respect to her/his parent, lives as a couple where welfare gains of marriage are produced by means of a public good at the level of the couple. The parent is not interested in the utility of the spouse of the daughter/son, since there is no altruism involved at the level of the couple itself.

Let U_p and V_1 be the strictly quasi-concave and increasing utility functions of the donor and of the recipient, respectively:

$$U_p(C_p, V_1) = u_p(C_p) + \beta_p V_1(Q, C_1, U_p) \tag{1}$$

$$V_1(Q, C_1, U_p) = v_1(Q, C_1) + \beta_1 U_p(C_p, V_1) \tag{2}$$

where u_p and v_1 denote the levels of sub-utility, C_p and C_1 represent the consumption of the parent and of the daughter/son, respectively, Q corresponds to the level of production of the family good and $\beta_j \in (0, 1)$, $j = p, 1$, indicate the degrees of altruism.

The preferences of the spouses are represented by the utility functions:

$$v_1(Q, C_1) = A(Q)C_1 - B_1(q_1) \tag{3}$$

$$v_2(Q, C_2) = A(Q)C_2 - B_2(q_2) \tag{4}$$

where $C_i, i = 1, 2$, denote the private consumption of each spouse and q_i the contribution of each of them to the family good, in such a way that $Q = q_1 + q_2$. The function $A(.)$ can be considered as a production function and for the sake of simplicity is common to both spouses, with $A' > 0$. Thus, this variable q_i represents a vector of inputs contributed by each spouse to the production of the family good, whose consumption is not rival and implies a cost in monetary or utility terms, represented by the function $B_i(q_i) > 0$, in such a way that $B_i' \geq 0$, $B_i'' \geq 0$.

By applying backward induction, we begin solving the equilibrium corresponding to the second stage of the game. Denoting by T, s and p the inter-generational transfer, a transfer made by one spouse to the other (we assume that it is donated by 2 and received by 1), and the monetary cost of the purchase of inputs for the provision of the family good, respectively; and with y_i representing the income of each spouse, the private consumption is given as: $C_1 = y_1 + s + T - pq_1$ and $C_2 = y_2 - s - pq_2$.

[1] A relevant exception to this situation is the work of Suen et al. (2003) who, adopting the approach of a Nash bargaining model, analyses the effects of inter-generational transfers on the allocation of resources in a marriage.

Therefore, the utility possibilities frontier is characterised by way of the conditioned optimisation programme:

$$\underset{q_1,q_2,s}{\text{Max}}\, V_1(q_1, q_2, u_p) = \frac{A(Q)(y_1 + s + T - pq_1) - B_1(q_1) + \beta_1 u_p(C_p)}{1 - \beta_1\beta_p}$$
$$\text{subject to: } A(Q)(y_2 - s - pq_2) - B_2(q_2) = v_2$$

from whose first order conditions we obtain the optimum levels of provision of the family good, q_1^*, q_2^*, which will depend solely on the family incomes $(y_1 + y_2 + T)$. Since y_p denotes the income level of the parent, the private consumption of the donor will be given by $C_p = y_p - T$. Taking this relationship into account, and applying the envelope theorem, we can obtain the equations:

$$\frac{\partial V_1}{\partial T} = \frac{A(Q^*) - \beta_1 u_p'}{1 - \beta_1\beta_p} \tag{5}$$

$$\frac{\partial V_1}{\partial v_2} = \frac{-1}{1 - \beta_1\beta_p} \tag{6}$$

with (6) being the slope of the utility possibilities frontier.

As stated earlier, the allocation of the welfare between both spouses is the result of the Nash bargaining solution, in such a way that equilibrium is obtained by solving the maximisation problem:

$$\underset{v_2}{\text{Max}}\, J = (V_1 - \bar{v}_1)(v_2 - \bar{v}_2),$$

where $\bar{v}_i$, $i = 1, 2$, denote the levels of utility obtained at the threat point.

From the first order condition of that problem:

$$-v_2 + \bar{v}_2 + (1 - \beta_1\beta_p)(V_1 - \bar{v}_1) = 0 \tag{7}$$

we obtain the optimum level of utility of 2, v_2^*, which, in turn, determines the level of utility of 1: $v_1^* = V_1(y_1, y_2, p, T, v_2^*, u_p)$. Moreover, differentiating such a first order condition, we can deduce the influence of the transfer on the level of welfare of each spouse in the marriage:

$$\frac{\partial v_1^*}{\partial T} = \frac{1}{2}\left[\frac{\partial V_1}{\partial T} + \frac{\partial \bar{v}_1}{\partial T} - \frac{1}{(1 - \beta_1\beta_p)}\frac{\partial \bar{v}_2}{\partial T}\right] \tag{8}$$

$$\frac{\partial v_2^*}{\partial T} = \frac{1}{2}\left[\frac{\partial \bar{v}_2}{\partial T} + (1 - \beta_1\beta_p)\left(\frac{\partial V_1}{\partial T} - \frac{\partial \bar{v}_1}{\partial T}\right)\right]. \tag{9}$$

Therefore, the effect of an inter-generational transfer on the allocation of the welfare derived from the marriage will depend crucially on the definition of the threat point implicit in the bargaining process.

More particularly, if we assume that the dissolution of the marriage represents the threat point of the bargaining process, the utility functions of the spouses will take the following expressions:

$$\bar{v}_1 = \frac{A(q_1)(y_1 + T - pq_1) - B_1(q_1) + \beta_1 u_p}{1 - \beta_1\beta_p} \tag{10}$$

$$\bar{v}_2 = A(q_2)(y_2 - pq_2) - B_2(q_2). \tag{11}$$

The optimum behaviour of each of these two agents consists in determining the level of provision of the family good that maximises her/his individual utility, given the budget constraint.

For the recipient of the transfer the optimum levels of provision of the public good and of utility are: $\tilde{q}_1 = \tilde{q}_1(y_1, T)$; $\bar{v}_1^* = \bar{v}_1^*(y_1, p, T, u_p)$, while, for the other agent, these levels will depend solely on her/his own income levels: $\tilde{q}_2 = \tilde{q}_2(y_2)$; $\bar{v}_2^* = \bar{v}_1^*(y_2, p)$.

From these relationships, we can deduce that, at the threat point, the transfer has a null effect on the level of utility of 2:

$$\frac{\partial \bar{v}_2^*}{\partial T} = 0. \tag{12}$$

Furthermore, applying the envelope theorem, and knowing that $C_p = y_p - T$, the influence of the transfer on the level of welfare achieved by its recipient at the threat point is given by:

$$\frac{\partial \bar{v}_1^*}{\partial T} = \frac{A(\tilde{q}_1) - \beta_1 u'_p}{(1 - \beta_1 \beta_p)}. \tag{13}$$

On the basis of all the above, we can deduce, in line with Suen et al. (2003), that the inter-generational transfer has a greater effect on the welfare of both spouses, in the situation of marriage, than it does in the case of divorce:

$$\frac{\partial (v_1^* - \bar{v}_1)}{\partial T} > 0 \quad \text{and} \quad \frac{\partial (v_2^* - \bar{v}_2)}{\partial T} > 0. \tag{14}$$

As a result, the parent finds it more advantageous to donate a transfer to the married daughter/son than to do so in the situation of their divorce. This result, therefore, indicates a possible positive effect of inter-generational transfers on the stability of marriage.

We will analyse the equilibrium corresponding to the first stage of the game, thus determining the optimum behaviour of the donor of the transfer. We begin by determining the behaviour of the parent at the threat point, with the objective being to determine the amount of transfer that maximises the individual utility, subject to the budget constraint:

$$\operatorname*{Max}_{T} .U_p(C_p, \bar{v}_1^*) = u_p(C_p) + \beta_p \bar{v}_1^*$$
$$\text{s.t. } C_p = y_p - T$$

whose first order condition is given by:

$$-u'_p + \beta_p \frac{\partial \bar{v}_1^*}{\partial T} = 0. \tag{15}$$

By substituting (13) in (15) it can be seen that the optimum level of transfer associated with the threat point will depend on the incomes of the donor and of the recipient, as well as on the degree of altruism of the donor. Formally: $\tilde{T} = \tilde{T}(y_p, y_1, \beta_p)$, from which we can deduce the independence with respect to the degree of altruism of the recipient:

$$\frac{\partial \tilde{T}}{\partial \beta_1} = 0. \tag{16}$$

As a consequence, in the situation of divorce, the amount of the family public good, as well as the optimum level of utility of the recipient, will be independent of her/his degree of altruism.

Furthermore, by applying the implicit function theorem and considering the second order condition of the earlier problem, we can also deduce the increasing character of the optimum level of transfer with respect to the degree of altruism of the donor:

$$\frac{\partial \tilde{T}}{\partial \beta_p} > 0. \tag{17}$$

Subsequently, we consider the equilibrium of the first stage assuming that, in the second stage, the levels of provision of the family good are determined in accordance with the Nash bargaining solution:

$$\operatorname*{Max}_{T} .U_p(C_p, v_1^*) = u_p(C_p) + \beta_p v_1^*$$
$$\text{s.t. } C_p = y_p - T$$

whose first order condition is given by:

$$-u'_p + \beta_p \frac{\partial v_1^*}{\partial T} = 0. \tag{18}$$

By substituting (8) in (18), such a condition can be written as:

$$-2u'_p + \beta_p \left[A(Q^*) + A(\tilde{q}_1)\right] = 0 \tag{19}$$

and from (19) we can deduce the optimum level of transfer T^*.

By applying the implicit function theorem we can derive a null relationship between the degree of altruism of the recipient and the optimum level of transfer:

$$\frac{\partial T^*}{\partial \beta_1} = 0 \tag{20}$$

as well as an increasing pattern in the optimum level of transfer with respect to the degree of altruism of the donor:

$$\frac{\partial T^*}{\partial \beta_p} > 0. \tag{21}$$

Having determined the effect of the degree of altruism on the transfer, we can now analyse its consequences for the welfare of the recipient and of her/his spouse, as well as the possible effects on the stability of their marriage.

Proposition. *The degree of altruism of the recipient has a null effect on the gains in welfare derived from the marriage by the recipient's spouse, and a positive effect on those derived by the recipient.*

The degree of altruism of the donor has a positive effect on the gains in welfare derived from the marriage by the recipient's spouse, and an ambiguous effect on those derived by the recipient.

Proof. We begin by analysing the effect of the degree of altruism of the recipient on the welfare of her/his spouse. The maximum utility that this spouse obtains in the equilibrium associated with the Nash bargaining solution, is a function that depends on the family incomes and the degree of altruism of the donor: $v_2^* = v_2^*(y_1, y_2, p, T^*(y_1, y_2, y_p, \beta_p))$. Thus, the effect of β_1 on the level of welfare achieved in marriage is:

$$\frac{\partial v_2^*}{\partial \beta_1} = \frac{\partial v_2^*}{\partial T}\frac{\partial T^*}{\partial \beta_1} = 0, \tag{22}$$

given the null effect of the transfer with respect to β_1.

Furthermore, bearing in mind the independence of the level of utility achieved at the threat point with respect to the amount of the transfer, we can immediately deduce a null effect of β_1 on the benefit derived from the marriage:

$$\frac{\partial (v_2^* - \bar{v}_2^*)}{\partial \beta_1} = 0. \tag{23}$$

Let us now consider how the welfare of the recipient of the transfer varies in terms of changes in her/his own degree of altruism. Differentiating the level of welfare of the recipient associated with the Nash bargaining solution, $v_1^* = V_1\ (y_1, y_2, T^*, v_2^*, u_p)$, with respect to β_1:

$$\frac{\partial v_1^*}{\partial \beta_1} = \frac{\partial V_1}{\partial \beta_1} + \frac{1}{2}\frac{\partial T^*}{\partial \beta_1}\frac{\partial v_1^*}{\partial T} > 0 \tag{24}$$

and operating knowing that β_1 does not affect the optimum level of transfer:

$$\frac{\partial (v_1^* - \bar{v}_1^*)}{\partial \beta_1} = \frac{\beta_p (v_1^* - \bar{v}_1^*)}{(1 - \beta_1 \beta_p)} > 0. \tag{25}$$

Let us now consider the influence of the donor's degree of altruism on the allocation of the utility of both spouses.

For the recipient's spouse, we can immediately deduce from (21) that the degree of altruism has a positive and indirect effect on the level of utility and given that, at the threat point, this is independent of the amount of the transfer, this implies a larger gain derived from the marriage by that spouse:

$$\frac{\partial (v_2^* - \bar{v}_2^*)}{\partial \beta_p} = \frac{\partial v_2^*}{\partial T}\frac{\partial T^*}{\partial \beta_p} > 0. \tag{26}$$

However, for the recipient, the influence of the donor's degree of altruism is not so clear. Differentiating $v_1^* = V_1\ (y_1, y_2, T^*, v_2^*, u_p)$ with respect to β_p, and after some operations, we obtain the following, which can be either positive or negative.

$$\frac{\partial (v_1^* - \bar{v}_1^*)}{\partial \beta_p} = \frac{\beta_1 (v_1^* - \bar{v}_1^*)}{(1 - \beta_1 \beta_p)} + \frac{\partial v_1^*}{\partial T}\frac{\partial T^*}{\partial \beta_p} - \frac{\partial \bar{v}_1^*}{\partial T}\frac{\partial \tilde{T}}{\partial \beta_p}. \tag{27}$$

From (27) we can appreciate that a change in the degree of altruism has a dual effect on the increase in the level of utility derived from the marriage: on the one hand, a direct effect; on the other, an indirect effect through the amount of transfer. However, and in contrast to what took place earlier, the donor's degree of altruism now clearly does have a positive influence on the optimum level of transfer associated with divorce. The indirect effect of expression (27) differentiates between a positive effect due to the change in the transfer obtained in the Nash solution, and a negative effect caused by the change in the threat point. In this way, it can be the case that this latter, negative, effect dominates the positive ones, giving rise to a situation where an increase in the donor's altruism leads to a decrease in the improvement of welfare derived from the marriage by the recipient. □

3. An example

We now illustrate the earlier general result by developing an example which assumes the following specific functional formulations for the individual's utility functions:

$$v_i\ (Q, C_i) = Q^{\alpha} C_i; \quad 0 < \alpha < 1\ (i = 1, 2). \tag{28}$$

$$u_p\ (C_p) = C_p^{\gamma}; \quad 0 < \gamma < 1. \tag{29}$$

By normalizing the price of the family good to one ($p = 1$), the optimum levels of the public good associated with the cooperative solution and with the threat point are given by, respectively:

$$Q^* = (q_1^* + q_2^*) = \frac{\alpha(y_1 + y_2 + T)}{(1+\alpha)} \tag{30}$$

$$\tilde{q}_1 = \frac{\alpha(y_1 + T)}{(1+\alpha)}; \qquad \tilde{q}_2 = \frac{\alpha y_2}{(1+\alpha)}. \tag{31}$$

By introducing these expressions in the objective functions, we can deduce the utility levels attained by both spouses, in both the bargaining solution as well as at the threat point:

$$v_1^* = \frac{\alpha^{\alpha}\left[(y_1 + y_2 + T)^{1+\alpha} - y_2^{1+\alpha}\right]}{2(1+\alpha)^{1+\alpha}(1-\beta_1\beta_p)} + \frac{\beta_1 C_p^{\gamma}}{(1-\beta_1\beta_p)} \tag{32}$$

$$v_2^* = \frac{\alpha^{\alpha}\left[(y_1 + y_2 + T)^{1+\alpha} + y_2^{1+\alpha} - (y_1 + T)^{1+\alpha}\right]}{2(1+\alpha)^{1+\alpha}} \tag{33}$$

$$\bar{v}_1 = \frac{\alpha^{\alpha}(y_1 + T)^{1+\alpha}}{(1+\alpha)^{1+\alpha}(1-\beta_1\beta_p)} + \frac{\beta_1 C_p^{\gamma}}{(1-\beta_1\beta_p)} \tag{34}$$

$$\bar{v}_2 = \frac{\alpha^{\alpha} y_2^{1+\alpha}}{2(1+\alpha)^{1+\alpha}}. \tag{35}$$

From these equations, we can immediately deduce the positive effect that the intergenerational transfer has on the utility surplus of both spouses derived from the marriage:

$$\frac{\partial(v_1^* - \bar{v}_1)}{\partial T} = \frac{\alpha^{\alpha}\left[(y_1 + y_2 + T)^{\alpha} - (y_1 + T)^{\alpha}\right]}{2(1+\alpha)^{\alpha}(1-\beta_1\beta_p)} > 0 \tag{36}$$

$$\frac{\partial(v_2^* - v_2)}{\partial T} = \frac{\alpha^{\alpha}\left[(y_1 + y_2 + T)^{\alpha} - (y_1 + T)^{\alpha}\right]}{2(1+\alpha)^{\alpha}} > 0. \tag{37}$$

After characterizing the equilibrium corresponding to the second stage, we now analyze the optimum decision of the donor. In order to facilitate the resolution, we assume a particular case where $\alpha = \gamma = \frac{1}{2}$. Under this assumption, the optimum levels of transfer associated with both the bargaining solution and the status quo are, respectively:

$$T^* = \frac{3\beta_p(2y_p - 2y_1 - y_2) + \beta_p^3 y_p y_2^2 + 6\sqrt{\Delta_1}}{(12 + \beta_p^2 y_2^2)\beta_p} \tag{38}$$

$$\tilde{T} = \frac{\beta_p(y_p - y_1) + \sqrt{\Delta_2}}{2\beta_p} \tag{39}$$

where:

$$\Delta_1 = \beta_p^2(y_1 + y_p)(y_1 + y_2 + y_p) - 3$$
$$\Delta_2 = \beta_p^2(y_1 + y_p) - 3.$$

From (38) and (39) we can deduce that the transfer levels are independent of the recipient's degree of altruism and are increasing with respect to the donor's degree of altruism: $\frac{\partial T^*}{\partial \beta_1} = \frac{\partial \bar{T}}{\partial \beta_1} = 0$; $\frac{\partial T^*}{\partial \beta_p} > 0$, $\frac{\partial \bar{T}}{\partial \beta_p} > 0$.

We can now analyze the effect of both the degree of altruism of the donor and of the recipient of the transfer on the utility surplus derived from the marriage.

From the point of view of the recipient's spouse, and given the independence between the transfer levels with respect to β_1, we deduce that such a degree of altruism does not affect the utility surplus corresponding to the spouse:

$$\frac{\partial(v_2^* - \bar{v}_2)}{\partial \beta_1} = 0. \tag{40}$$

By contrast, and given the positive effect on the transfer level associated with the cooperative solution, a higher degree of altruism of the donor implies an increase in the utility surplus of the recipient's spouse:

$$\frac{\partial(v_2^* - \bar{v}_2)}{\partial \beta_p} = \frac{\alpha^\alpha \left[(y_1 + y_2 + T^*)^{1+\alpha} - (y_1 + T^*)^{1+\alpha}\right]}{2(1+\alpha)^{1+\alpha}} \frac{\partial T^*}{\partial \beta_p} > 0. \tag{41}$$

From the perspective of the recipient of the transfer, Figs. 1a and 1b show the evolution of her/his utility surplus with respect to the values β_1 and β_p, respectively (for the particular case where $y_1 = 1$, $y_2 = 2$, $y_p = 3$).

Fig. 1a (by assuming $\beta_p = 2/3$), shows the positive effect of the degree of altruism of the daughter/son on her/his own surplus derived from the marriage, given that the marginal influence of β_1 always reaches positive values.

Fig. 1b (by assuming $\beta_1 = 2/3$), shows the evolution of the welfare surplus of the recipient of the transfer with respect to the parent's degree of altruism. From this evolution, we can deduce that the marginal effect of β_p on the utility gains can be positive or negative. Specifically, a positive effect on the recipient's welfare surplus requires that the parent's degree of altruism be sufficiently high.

As we have mentioned, such an ambiguous result is due to the fact that, for low values of β_p the marginal influence that such a parameter exerts on the transfer level attained at divorce is greater than that exerted on the transfer associated with the cooperative solution. In this way, the increase in the utility level due to an increase in the parent's altruism level is greater at the threat point than in the cooperative solution. Such a result is reflected in Fig. 2, where we present the evolution of the marginal influence of β_p on the difference between the optimum levels of transfer $\frac{\partial(T^* - \tilde{T})}{\partial \beta_p}$.

4. Conclusions and extensions

In this paper, we have analysed the effects that the degree of altruism has on the welfare gains derived from marriage. Particularly, we have combined two approaches that the literature has traditionally regarded as independent: on the one hand, the so-called inter-generational transfer models and, on the other, the family bargaining models. In fact, our paper represents an extension of the former, in that a consideration of a bilateral bargaining process at the recipient level allows us to study the effects of certain private transfers in a multi-personal context.

The characterisation of the equilibrium of the game allows us to conclude that an increase in the recipient's degree of altruism leads to an increase in the recipient's own welfare derived from the marriage, but it does not influence her/his spouse's welfare. By contrast, when the donor's degree of altruism is greater, this leads to increasing welfare derived from the marriage for the recipient's spouse, although this effect is ambiguous for the recipient.

In closing, it should be noted that the results depend on some of the assumptions introduced in the model, and that changes in these assumptions represent the main potential extension to this work. Thus, our analysis could be extended by considering another threat point in the bargaining process; for example, the non-cooperative solution

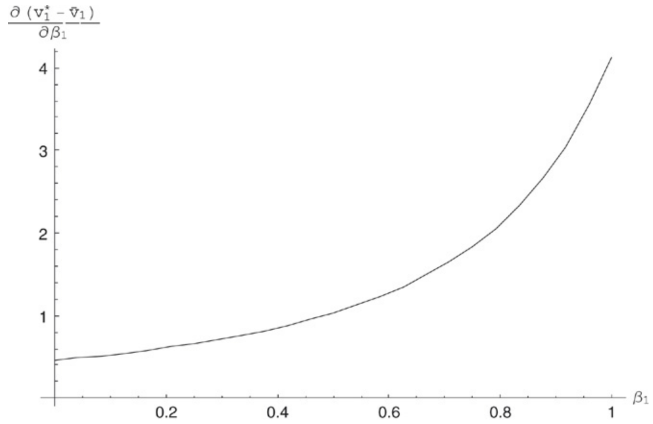

Fig. 1a. Effect of β_1 on the welfare surplus of the recipient of the transfer.

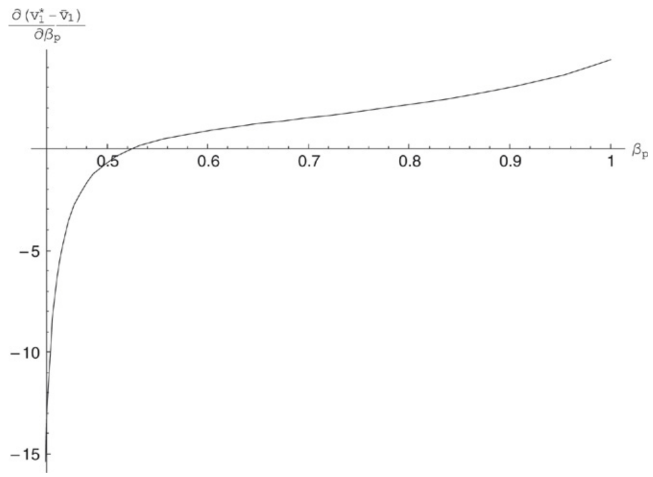

Fig. 1b. Effect of β_p on the welfare surplus of the recipient of the transfer.

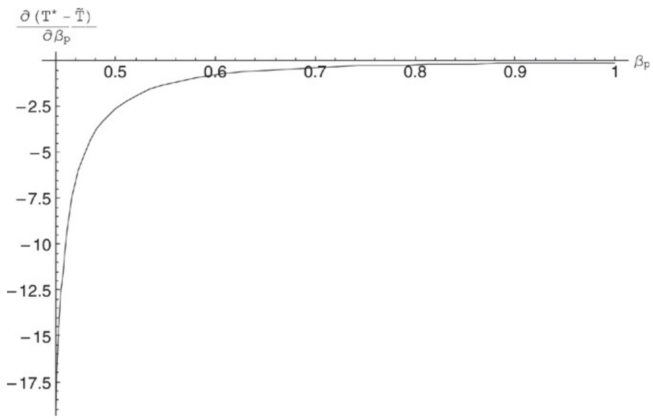

Fig. 2. Marginal influence of β_p on the difference between the optimum levels of transfer.

(Lundberg and Pollak, 1993; Chen and Woolley, 2001). Moreover, the relationship of altruism between the donor and the recipient of the transfer could be substituted for a relationship of exchange (impure altruism), where the donor would receive some type of service from the recipient in exchange (Cox, 1987).

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References

Becker, G., 1973. A theory of marriage, part. I. Journal of Political Economy 81, 813–846.

Becker, G., 1974. A theory of marriage, part. II. Journal of Political Economy 81, S11–S26.

Chen, Z., Woolley, F., 2001. A Cournot–Nash model of family decision making. The Economic Journal 111, 722–748.

Cox, D., 1987. Motives for private income transfers. Journal of Political Economy 95, 509–546.

Laferrère, A., Wolff, F.-Ch., 2004. Microeconomic models of family transfers. In: Gerard-Varett, L.A., Kolm, S.-C., Mercier Ythier, J. (Eds.), Handbook on the Economics of Giving, Reciprocity and Altruism. North-Holland, Amsterdam.

Lundberg, S., Pollak, R., 1993. Separate spheres bargaining and the marriage market. Journal of Political Economy 101, 988–1010.

Manser, M., Brown, M., 1980. Marriage and household decision theory: A bargaining analysis. International Economic Review 21, 31–44.

McElroy, M.B., Horney, M.J., 1981. Nash-bargained household decisions: Towards a generalization of the theory of demand. International Economic Review 22, 333–349.

Samuelson, P.A., 1956. Social indifference curves. Quarterly Journal of Economics 70, 1–22.

Suen, W., Chan, W., Zhang, J., 2003. Marital transfer and intra-household allocation: A Nash-bargaining analysis. Journal of Economic Behavior and Organization 52, 133–146.