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2007

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Revised, september 2004

Abstract

In this note, we use the theory of incentives contracting to characterize the pattern of financial transfers within the family. Using an altruistic model with one parent and two children, we find that the parent may provide a lower gift to the less well-off child, while bequests are compensatory.

JEL classification: D62, J2

Key words: Family incentives, gifts, bequests

1 Introduction

Two main theoretical models have been suggested to explain intergenerational transfers within the family, i.e. altruism and exchange (see Laferrère and Wolff, 2004). In order to differentiate between these two motives, most empirical studies focus on the relationship between the level of transfers and the recipient's income, which should be negative under altruism. Recalling that family transfers may be made either as inter vivos gifts or bequests, some predictions of the exchange motive fit with the data, but some findings concerning the provision of transfers among siblings are more consistent with altruism.

On the one hand, bequests are often equally divided across the children, especially for large estates. Wilhelm (1996) observes equal sharing in about two-thirds of the cases

*We are indebted to an anonymous referee for very helpful comments and suggestions.

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and bequests are not really correlated with children's incomes (Dunn and Phillips, 1997). Behrman and Rosenzweig (2004) find significant differences in reports of bequests between siblings, but this is mainly due to measurement errors. On the other hand, intrahousehold evidence on inter vivos transfers suggests that the less well-off children receive more money (McGarry, 1999, McGarry and Schoeni, 1995), but Cox (1987) and Cox and Rank (1992) reach the opposite conclusion. Another finding is that inter vivos gifts are very often directed towards high-educated children, even after controlling for permanent income effects (McGarry, 1999).

As these findings challenge the validity of existing theories regarding the motives for family transfers, some papers have proposed alternative explanations to rationalize the pattern of gifts and bequests. Parents may suffer from a psychic cost if they deviate from equal division of bequests (Wilhelm, 1996). Gifts are likely to be private information (Lundholm and Ohlsson, 2000), and parents may know the permanent incomes of the children only with uncertainty (McGarry, 1999). Cremer and Pestieau (1996) develop a model of transfers in a setting of moral hazard and adverse selection and show that altruistic parents use a mix of inter vivos gifts and bequests. The child may be more deprivated when receiving less than siblings (Stark, 1998), and the division of bequests provides a signal about parental preferences (Bernheim and Severinov, 2003). Interestingly, these theoretical explanations predict the use of a mix of gifts and bequests, but the expected effects are ambiguous concerning their redistributive effects[1].

In this paper, we draw on the theory of incentives contracting and present an altruistic model involving the use of a gift-bequest mix. We prove that bequests are compensatory owing to parental altruism, while the relationship between inter vivos gifts and the recipient's income may be positive or negative depending on the child's degree of risk aversion. The remainder of this note is organized as follows. In section 2, we describe the model. The optimal pattern of transfers is derived in section 3. Section 4 concludes.

2 The model

Let us consider a family with one parent and two children, respectively denoted by upscripts p and $i = 1, 2$. Children are heterogeneous and the type of child is given by ability w^i, where w^i is the child's wage rate on the labor market. We assume that $w^1 > w^2$, meaning that child 1 is more able than child 2. There are two periods in the model.

In the first one, children are young and they choose a level of effort e^i, which affects income expectations. The child will receive more money in the second period with more

[1] In Cremer and Pestieau (1996) and Stark (1998), bequests should have a stronger redistributive impact than gifts and gifts should be the same for all children. Conversely, in McGarry (1999) and Lundholm and Ohlsson (2000), gifts are more likely to be directed towards the less well-off children.

effort now. For instance, effort may be seen as time spent on the search for better job opportunies. However, effort is costly for the children. The parent who behaves in an altruistically way seeks to compensate the children for disutility involved by effort. Let m^i be the price per unit of effort, so that the gift made by the parent to the child i is simply $e^i m^i$. Importantly, we assume that effort is perfectly observable, so that there is no problem of adverse selection. In the second period, children receive an activity income which is proportional to previous effort. They also receive a bequest b^i from the parent. The budget constraints are ($\forall i = 1, 2$):

$$C_1^i = m^i e^i \tag{1}$$

$$C_2^i = w^i e^i + b^i \tag{2}$$

where C_1^i and C_2^i are the levels of consumption per period for child i. In period 1, the problem for the child i is to maximize the utility function v^i, whose arguments are C_1^i and e^i [2]. In the sequel, we assume that both children have identical preferences, so that $v^1 = v^2 = v$. The maximization program is for child i given by:

$$\max_{e^i} v(C_1^i, e^i) \tag{3}$$

so that the marginal cost of effort is equalized with its marginal benefit:

$$-m^i v_1(m^i e^{i*}, e^{i*}) = v_2(m^i e^{i*}, e^{i*}) \tag{4}$$

The optimal level of effort e^{i*} may be expressed as $e^{i*} = e^{i*}(m^i)$. When differentiating $\partial v/\partial e^i = 0$, we find that e^{i*} depends on the child's degree of relative risk aversion σ. Indeed, we have $\operatorname{sgn} de^{i*}/dm^i = \operatorname{sgn}(v_1 + m^i e^i v_{11} + e^i v_{21})$. For the sake of simplicity, we assume separability for v such that $v_{21} = 0$. It follows that :

$$\operatorname{sgn} de^{i*}/dm^i = \operatorname{sgn}(1 - \sigma)$$

where the measure of relative risk aversion is $\sigma = -m^i e^i v_{11}(.)/v_1(.)$. Clearly, $de^{i*}/dm^i > 0$ when $\sigma < 1$. Effort is an increasing function of the parental inter vivos transfer only when the child is characterized by a low risk aversion. Finally, let $V(m^i) = \sup_{e^i} v(m^i e^i, e^i)$ be the child's indirect utility, with $V' = e^{i*} v_1(.) > 0$.

The parent proposes an incentives contracting menu that accounts for the children's well-being. We assume that the parent is motivated by paternalistic altruism. Children behave in a myopic way and are unable to perfectly foresee the consequences of their current behavior. Hence, the parent's objective function is given by a weighted sum of his own (linear) utility $Y^p - \sum_{i=1}^2 (m^i e^{i*} + b^i)$ and of the children's well-being given by $\sum_{i=1}^2 (V(m^i) + u(w^i e^{i*} + b^i))$, Y^p being the parental income. The function u indicates how

[2] The utility function v^i $(i = 1, 2)$ is supposed to be continuous, twice differentiable, and concave.

the parent evaluates the children's actions through his own preferences[3]. The problem for the parent is:

$$\max_{m^i,b^i} W = Y^p - \sum_{i=1}^{2}\left(m^i e^{i*} + b^i\right) + \beta \sum_{i=1}^{2}\left(V(m^i) + u(w^i e^{i*} + b^i)\right) \tag{5}$$

where β is the degree of parental altruism (with $0 < \beta < 1$). From the two first-order conditions $\partial W/\partial m^i = 0$ and $\partial W/\partial b^i = 0$, we obtain ($\forall i = 1, 2$):

$$-(e^i + m^i e^{i'}) + \beta(V^{i'} + w^i e^{i'} u') = 0 \tag{6}$$

$$-1 + \beta u' = 0 \tag{7}$$

Since $u' = 1/\beta$ and using (6), we get $-(e^i + m^i e^{i'}) + \beta V' + w^i e^{i'} = 0$. Then, recalling that $V' = e^{i*} v_1(.)$, we finally deduce:

$$\beta e^{i*} v_1(m^i e^{i*}, e^{i*}) + e^{i'}(w^i - m^{i*}) - e^{i*} = 0 \tag{8}$$

3 The optimal pattern of transfers

We now characterize the distribution of parental transfers, gifts and bequests. Given the separability assumption for v, we rely on the following form $v(m^i e^i) - \psi e^i$. Thus, ψ is simply the cost per unit of effort. Condition (4) is now $m^i v'(m^i e^{i*}) = \psi$ (with $v' = v_1$), so that we obtain $1 + m^i e'(m^i)/e(m^i) = 1/\sigma$ after some manipulations. Using $\beta e^i \psi/m^i + e'(w^i - m^i) - e^i = 0$ and $m^i e'/e = (1-\sigma)/\sigma$, it follows that :

$$-m^{i*} + (w^i - m^{i*})\frac{1-\sigma}{\sigma} + \beta\psi = 0 \qquad \forall i = 1, 2 \tag{9}$$

from which we deduce the optimal inter vivos gifts m^i. The bequest values b^i are then obtained using $u'(w^i e^{i*} + b^{i*}) = 1/\beta$.

Proposition 1 *The optimal pattern of family transfers is given by ($\forall i = 1, 2$):*

i) $m^{i*} = (1-\sigma)w^i + \sigma\beta\psi$

ii) $b^{i*} = u'^{-1}(1/\beta) - w^i e^{i*}(m^{i*})$

In our framework, the incentive rate m^i is a convex combination of w^i and $\beta\psi$, with weights given by σ and $1-\sigma$. Results from comparative statics imply that $\frac{\partial m^{i*}}{\partial \beta} = \sigma\psi > 0$, $\frac{\partial m^{i*}}{\partial \psi} = \sigma\beta > 0$, $\frac{\partial m^{i*}}{\partial \sigma} = -(w - \beta\psi) < 0$ (since $\beta < 1$ and $\psi < w^i$), and $\frac{\partial m^{i*}}{\partial w^i} = (1-\sigma)$. Let us briefly interpret these results. The inter vivos transfer is larger when the parent

[3] This corresponds to the definition of imperfect empathy described in Bisin and Verdier (2001).

is more altruistic and when the cost per unit of effort is high, while it is a decreasing function of the child's risk aversion. Finally, the gift value may be either increasing or decreasing with the child's wage rate, depending on the child's measure of relative risk aversion. With $\sigma < 1$, the parent provides more incentives to the child and a richer child is expected to receive more money. Conversely, when the child is risk averse, less money is given by the parent, which is usually expected in an altruistic model. Hence, our incentives contracting model shows that it is important to account for risk attitudes.

Proposition 2 *The distribution of gifts and bequests between children is such that:*

i) $b^{2*} > b^{1*} \qquad \forall 0 < \sigma$

ii) $m^{1*} \gtreqless m^{2*} \quad \Leftrightarrow \quad \sigma \lesseqgtr 1$

So, we find that child 2 is expected to receive a higher amount of bequests that child 1[4]. Given heterogeneity in wages, our model leads to a compensatory motivation for bequests. However, results are different for inter vivos transfers since the intrafamily distribution of gifts depend on the children's risk aversion. Despite of parental altruism, inter vivos transfers are not necessarily directed to the less well-off child. Gifts may be either compensatory or uncompensatory, depending on the children's degree of relative risk aversion. With a low risk aversion, the model predicts that the most able child (i.e. child 1) will receive a larger gift, while child 2 receives a larger bequest. Conversely, when $\sigma > 1$, the less able child receives larger amounts of gift and bequest from the parent.

4 Conclusion

In this paper, we have considered an incentives contracting model of family transfers. An altruistic parent provides inter vivos transfers to compensate the children for disutility involved by observable effort and post mortem bequests to equalize the children's marginal utilities of consumption. When characterizing the optimal pattern of transfers, we find that bequests are compensatory, while the relationship between inter vivos gifts and children's incomes can be either positive or negative. Thus, accounting for family incentives may explain why inter vivos transfers are most ofen directed towards more educated children. Also, our theoretical framework suggests that it would be useful to introduce the children's risk attitude in empirical analyses of family transfers.

[4]Using Proposition 1, we deduce that $b^{2*} > b^{1*}$ if $w^2 e^2(m^2) < w^1 e^1(m^1)$, which always holds. The proof is similar when comparing m^{1*} and m^{2*}.

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