

Habit-Forming Children and Thankworthy Parental Altruism^{*}

Lin Zhang^a and Shinsuke Ikeda^b

Abstract

We propose a model of parental altruism toward a habit-forming child, where the child is unaware of his habit when young but, after getting grown up, becomes cognizant of it. An altruistic mother is predicted: (i) to keep income transfer to her young son lower than he himself looks forward to receiving; and, (ii) to reduce further the transfer upon an exogenous increase in his habit parameter. The unexpectedly small income transfer yet can be thankworthy to the grown-up son if the mother is sufficiently rich and altruistic: when evaluated by the realized habitual preferences, it actually generates greater welfare than the greater income transfer that the son expected to receive when young would have generated. This implies that parents from richer family, *ceteris paribus*, tend to be stricter against children's thriftlessness.

Keywords: Habit Formation, parental altruism, thankworthy, time preference, tough love.

JEL Classification: D1; D9.

1. Introduction

It is often observed that parents discipline their young children by keeping income transfer (e.g., allowances) to the children lower than the children themselves want. This causes conflict between parents, who do it from an altruistic motive, and young children, who think that more income transfers would enhance their welfare. As getting grown up, some children begin to understand the parents' altruistic intention and feel grateful to them, while other grown-up children could not appreciate the parents' intervention in their childhood. Why don't altruistic

^{*} We are thankful to Masao Ogaki and Yoshiyasu Ono for their comments. All remaining errors are ours.

^a Graduate School of Economics, Osaka University, 1-7 Machikaneyama, Toyonaka, Osaka 560-0043, Japan. Tel.: 81-6-6850-6111; Fax: 81-6-6850-5205.
Email: <kge017zl@mail2.econ.osaka-u.ac.jp>.

^b The Institute of Social and Economic Research, Osaka University, 6-1 Mihogaoka, Ibaraki, Osaka 567-0047, Japan. Tel.: 81-6-6879-8568, Fax: 81-6-6879-8583.
E-mail: <iked@iser.osaka-u.ac.jp>.

parents give sufficient income transfers that suffice young children? Why are or aren't grown-up children appreciate the parents' altruistic intervention? Although the issues over parental altruism and children's welfare are important to understand how parent-child interactions affect the consumption/saving behavior and related preference formation of the family members, economics has not so far examined the issues much.

To fill the void, this paper aims at addressing two specific problems:

- (i) why altruistic parents keep income transfer to young children lower than the children expect the parent to give; and
- (ii) whether, and in what conditions, the parents' behavior of restricting income transfer lower actually enhances the children's welfare, and hence is thankworthy to them.

To do it, we consider an altruistic parent's behavior for her habit-forming child, where she is altruistic in the Becker (1974) - Barro (1974) sense: she obtains utility from her own consumption and her child's utility. As in Weinberg (2001) and Bhatt and Ogaki (2012), the altruistic parent, say a mother, can perfectly determine the consumption level of her young child, say a son, by controlling income transfer to him. A unique feature of our model is that the child is habit-forming. By controlling income transfer to her young son, the mother in our model can influence his consumption habit and hence his future consumption behavior.

We posit two key assumptions. First, as in the case of actual kids, the young child is assumed to be unaware that consumption is habit-forming, whereas his mother is assumed to know it. The son thus tends to consume excessively. His altruistic mother has an incentive to keep her income transfer low to restrict the excess consumption. The habit model is a reasonable framework because the literature in psychology has reported empirically the importance of parental intervention to children's habits in various context, e.g., food consumption (e.g., Baumrind, 1991), passive leisure like watching T.V. (Walsh et al., 2013), and saving (Webley and Nyhus, 2006).¹

Second, we assume that, after getting grown up, the child becomes aware of the true mechanism of habit formation. Our interest is how the grown-up child re-evaluates his mother's strict upbringing retrospectively by using his realized habitual preferences. In particular, we regard the mother's income transfer to her young son as thankworthy to the (grown-up) son if, when evaluated by his true preferences, greater welfare is attained under the transfer than would have been attained under the greater income transfer which he expected to receive when he was

¹ However, there has been some controversy regarding empirical validity of habit formation models. See, e.g., Dynan (2000).

young.

2. The Model

Consider a family consisting of a parent and a child, both of whom live for three periods. The parent (a mother) gives birth to a child (a son) in her second period, which therefore overlaps with the child's first period.

The Child's Problem

In the child's first period, he is endowed with an exogenous income y_1 , and receives transfer T from the parent. In the second period, the child receives an exogenous income y_2 . Variables c_i ($i = 1, 2, 3$) denote the child's consumption in period i . The child is assumed to face borrowing constraint in period 1: $c_1 \leq y_1 + T$. We assume that his disposable income $y_1 + T$ is small enough that the borrowing constraint is binding:

$$c_1 = y_1 + T, \quad (1)$$

His intertemporal budget in periods 2 and 3 is given by

$$c_3 = R(y_2 - c_2). \quad (2)$$

where R is the gross interest rate.

The child forms consumption habits. His preferences are given by

$$U = u(c_1) + \beta u(c_2 - \theta_1 h_2) + \beta^2 u(c_3 - \theta_2 h_3), \quad (3)$$

$$\text{where } h_2 = c_1 \text{ and } h_3 = c_2,$$

which capture the habit effects of consumption in the previous period. Parameters $\theta_1, \theta_2 > 0$ represent the strength of habit formation, and $\beta > 0$ denotes the discount factor.

Assumption 1. The child is unaware of his habit in his first and second periods,. In his third period, he becomes aware of the habit.

Under Assumption 1, the child's consumption behavior is assumed to proceed as follows. In the first period, the child naively maximizes his lifetime utility

$$u(c_1) + \beta u(c_2) + \beta^2 u(c_3). \quad (4)$$

In the second period, the child notices that the utility is actually different from what was expected in the previous period. But, instead of realizing the true mechanism of habit formation, he incorrectly takes it as being caused by a permanent preference shock and maximizes the utility

$$u(c_2 - \theta_1 c_1^*) + \beta u(c_3 - \theta_1 c_1^*), \quad (5)$$

where c_1^* denotes the child's actual consumption level in the first period. In his third (the last) period, the child becomes aware of his true preferences with habit formation as in (3).

The Parent's Problem

Since the parent can affect her child's consumption and hence welfare through income transfer T , we focus on her decision in her second period. In the second period, she receives endowment income y_p , and maximizes the sum of the second and third period utilities by choosing consumption basket $(c_{2,p}, c_{3,p})$ and transfer T to the child. Her budget constraint is given by

$$c_{3,p} = R(y_p - c_{2,p} - T). \quad (6)$$

Assumption 2. The parent knows that her child is unaware of his own habit formation until his last period.

The parent is altruistic toward her child. We specify her utility function as a convex sum of the felicity from her own consumption $(u(c_{2,p}) + \beta u(c_{3,p}))$ and her child's true utility (U):

$$V = (1 - \gamma)[u(c_{2,p}) + \beta u(c_{3,p})] + \gamma U.^2 \quad (7)$$

where $\gamma \in [0,1]$ denotes the degree of parental altruism.

In order to obtain closed-form solutions, we specify the period utility function as:

Assumption 3. $u(x) = \frac{x^{1-\alpha}}{1-\alpha}$ ($\alpha > 0$).

We guarantee that the arguments of the utility functions are positive by assuming:

Assumption 4. When $\theta_2 < 1$, $(\beta R)^{-1/\alpha} < 1$, $y_p + y_1 < \frac{Ry_2}{\theta_1(1+R)}$;

$$\text{when } \theta_2 \geq 1, (\beta R)^{-1/\alpha} < \frac{1}{\theta_2}, y_p + y_1 < \frac{[1-\theta_2(\beta R)^{-1/\alpha}]Ry_2}{\theta_1(\theta_2+R)[1-(\beta R)^{-1/\alpha}]}$$

To show the welfare implications of the altruistic transfer, we distinguish and compare two types of the income transfers to the child: (i) the actual transfer T^* that the parent determines by maximizing her altruistic utility, i.e., (7); and (ii) the income transfer T^e that is expected by the child. As the parent knows of the child's habit formation, but the child does not, the two transfers will differ from each other.

3. The Altruistic Intervention of the Parent

In the following sub-sections, we characterize the income transfer T^* of the altruistic parent by comparing it with the young child's expectation on income transfer T^e . By substituting functions $c_i^*(T)$ into (3), we obtain the child's indirect utility as a function of income transfer T , $U(T)$. Notice that there exists a maximum of $U(T)$. We denote the transfer level that maximizes the child's utility by \bar{T} . By definition, it satisfies $U'(\bar{T}) = 0$. Using Assumption 3, we express \bar{T} as $\bar{T}(\alpha, \beta, R, \theta_1, \theta_2, y_1, y_2)$.

² Without loss of generality, we assume that the parent's period utility function is the same as the child's.

Since the child's utility is maximized at the point of \bar{T} , too much income transfer (more than \bar{T}) harms him. Note that the parent necessarily chooses income transfer level T^* such that it is smaller than \bar{T} : $T^* < \bar{T}$. It is because if T^* were higher than \bar{T} , the parent could enhance both her own welfare and the child's welfare by reducing the income transfer. However, the expected transfer T^e can be either smaller or larger than \bar{T} , depending on the parent's income level y_p . To compare the actual and expected transfers (T^* and T^e) and the corresponding welfare levels, it would thus be helpful to separate two cases: (i) $y_p > \bar{T}$ and (ii) $y_p \leq \bar{T}$, which represent the rich-parent and poor-parent cases, respectively.

Proposition 1. For any degree of parental altruism $\gamma \in (0,1)$, the parental income transfer is unexpectedly small to the young child, i.e., $T^* < T^e$.

Proposition 1 implies that, insofar as the parent is not perfectly selfish or perfectly altruistic, she keeps the transfer level to her child lower than he expects her to give. The parent knows that more transfer leads the child to form deeper habits and hence consume more excessively in the next period. Hence she intervenes child's behavior by keeping transfer low.

We compare utility values of actual transfer T^* ($U(T^*)$) and expected transfer T^e ($U(T^e)$) by employing true utility function (3). As the child is incognizant the true utility function $U(\cdot)$ until his third period, the utility function $U(\cdot)$ can be regarded as a retrospective welfare measure of income transfer T .

Definition 1. When $U(T^*) > U(T^e)$, parental income transfer T^* is referred to as *thankworthy* to the child.

Lemma 1. When the parent is rich, there exists a degree of parental altruism $\tilde{\gamma} \in (0,1)$ such that $U(T^*) = U(T^e)$.

Proposition 2. When the parent is rich ($y_p > \bar{T}$), the parental income transfer T^* is thankworthy for the child, i.e., $U(T^*) > U(T^e)$, if the parent is so altruistic that $\gamma > \tilde{\gamma}$.

Proposition 2 states that when the parent is sufficiently rich and sufficiently altruistic toward the child, the actual transfer enhances the child's welfare. In this context, in his third period, the child becomes aware of the habit and he thanks his parent for giving him less transfer than he expects.

4. Time Preference and Tough Love

Proposition 3. For any degree of parental altruism $\gamma \in (0,1)$, a higher degree of the child's habit in period two θ_1 implies a higher rate of time preference $\chi_{2,3}$ of the child, i.e., $\frac{d\chi_{2,3}}{d\theta_1} > 0$.

Proposition 4. For any degree of parental altruism $\gamma \in (0,1)$, a higher degree θ_1 of the child's

habit in the second period implies a lower level of parental income transfer T^* , i.e., $\frac{dT^*}{d\theta_1} < 0$.

5. Concluding Remarks

By employing a parental altruism model, where the child is incognizant of his own habit until grown up, we show that the parental income transfer is unexpectedly low to the young child. However, the unexpectedly low parental income transfer can generate higher welfare of the child than the expected transfer when evaluated by the retrospective measure. In other words, when the parent is rich and sufficiently altruistic, the parent income transfer is thankworthy to the grown-up child. The predictions of this model are consistent with daily observations.

References

- Barro, J. R. 1974. Are Government Bonds New Wealth? *Journal of Political Economy*, Vol. 82, pp. 1095-1117
- Baumrind, D. 1991. The Influence of Parenting Style on Adolescent Competence and Substance use. *Journal of Early Adolescence*, Vol. 11, No.1, pp. 56-95.
- Becker, G. 1974. A Theory of Social Interactions. *Journal of Political Economy*, Vol. 82, No. 6, pp. 1063-1093.
- Bhatt, V. and Ogaki, M. 2012. Tough Love and Intergenerational Altruism. *International Economic Review*, Vol. 53, No. 3, pp. 791-814.
- Dynan, K. E. 2000. Habit Formation in Consumer Preferences: Evidence from Panel Data. *The American Economic Review*, Vol. 90, No. 3, pp. 391-406.
- Moffit, T.E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R.J., Harrington, H., Houts, R., Poulton, R., Roberts, B.W., Ross, S., Sears, M.R., Thomson, W.M., and Caspi, A. 2011. A Gradient of Childhood Self-Control Predicts Health, Wealth, and Public Safety. *Proceedings of the National Academy of Sciences*, Vol. 108, pp. 2693–98.
- Obstfeld, M. 1990. Intertemporal Dependence, Impatience, and Dynamics. *Journal of Monetary Economics*, Vol. 26, pp. 45-75.
- Walsh, A. D., Laczniaik, P. N., Carlson, L. 1998. Mothers' Preferences for Regulating Children's Television. *Journal of Advertising*, Vol. 27, Issue 3, pp. 23-36.
- Webley, P., and Nyhus, E. 2006. Parents' Influence on Children's Future Orientation and Saving. *Journal of Economic Psychology*, Vol. 27, pp. 140-164.
- Weinberg, A. B. 2001. An Incentive Model of the Effect of Parental Income on Children. *Journal of Political Economy*, Vol. 109, No. 2, pp. 266-280.