

Capital Income Taxation with Parental Incentives

Yuta Saito* & Yosuke Takeda*

*Sophia University

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Contact

Sophia University
Faculty of Economics, Chiyoda-Ku, Kioi-Cho 7-1
102-8554 Tokyo, Japan
Email: yutasaito@eagle.sophia.ac.jp
y-takeda@sophia.ac.jp

Aim & Findings

- **Aim:** This paper studies the effect of [intergenerational time-preference heterogeneity](#) on [capital income taxation](#).
- **Setting:** There are kids and paternalistic parents who have different discount factors.
 - The parents directly affects kids' savings by leaving [state-contingent intergenerational transfers](#).
 - The parents indirectly affect the kids' savings by influencing the determination of capital tax schedule. (since the government respects all people's utilities)
- **Main Finding:** If the parents have higher discount factor than kids (i.e. hyperbolic discounting),
 - the [marginal parental transfer is positive](#) (which incentives kids' savings); the [marginal capital tax is positive](#) (which dis-incentivises kids' savings).
 - The tax does not perfectly remove the effects of parental intervention; kids savings are still enhanced comparing to the case without tax and transfers.

Model

Environment		Assumption (Time-Preference Heterogeneity) & Definition of Parameters	
<ul style="list-style-type: none"> • Two periods: $t = 1$ & 2. Two generations: K & P • Two identical parents live in period 1. The parents have two kids (H & L) who live in both periods. Hence there are four people in the economy. • Kids consume and save; parents consume and leave inter vivos transfers. 		<ul style="list-style-type: none"> • Time-preference heterogeneity among kids: $\beta^L < \beta^H$ • Intergenerational time-preference heterogeneity: $\beta^P = \beta^H$, $\beta^P > \beta^L$ • γ: The degree of paternalism; α: The degree of overall altruism. • A linear savings technology with rate of return $R > 0$. 	
Kids ($j = H, L$)		Parents (P)	Government (G)
Utility $U^j(\beta^j) = u(c_1^j) + \beta^j u(c_2^j)$ where c_t^j is j 's consumption at t .		$U^P = u(c_1^P) + \alpha \left[\frac{1}{2} \underbrace{W(\beta^P, \beta^H)}_{H's \text{ Utility}} + \frac{1}{2} \underbrace{W(\beta^P, \beta^L)}_{L's \text{ Utility}} \right]$ where $W(\beta^P, \beta^j) = \gamma \underbrace{U^j(\beta^P)}_{\text{Paternalism}} + (1 - \gamma) \underbrace{U^j(\beta^j)}_{\text{Altruism}}$.	$Welfare = \frac{1}{2} U^P + \frac{1}{4} U^H + \frac{1}{4} U^L = \frac{U^{G,H} + U^{G,L}}{2}$ where $U^{G,j} = u(c_1^j) + (1 + \alpha) [u(c_1^j) + \beta^{G,j} u(c_2^j)]$.
Optimal Consumption Path $\frac{u'(c_1^j)}{Ru'(c_2^j)} = \beta^j$		$\frac{u'(c_1^j)}{Ru'(c_2^j)} = \beta^{P,j}(\gamma)$ where $\beta^{P,j}(\gamma) = \gamma \beta^P + (1 - \gamma) \beta^j$.	$\frac{u'(c_1^j)}{Ru'(c_2^j)} = \beta^{G,j}(\alpha, \gamma)$ where $\beta^{G,j}(\alpha, \gamma) = \frac{\alpha \beta^{P,j} + \beta^j}{1 + \alpha}$.

Finding 1 (Optimal Saving for Each Player)

$$\begin{aligned} \beta^L < \beta^{G,L} < \beta^{P,L} < \beta^P \\ \beta^H = \beta^{G,H} = \beta^{P,H} = \beta^P \end{aligned} \implies \begin{aligned} s_*^L < s_*^{G,L} < s_*^{P,L} \\ s_*^H = s_*^{G,H} = s_*^{P,H} \end{aligned}$$

Intuition

- For H, there is no conflict of interest.
- The parents think L saves too less without intervention; have an incentive to set a positive marginal transfer rule. The government also considers L's saving would be too less; but the parents' intervention would be too much.

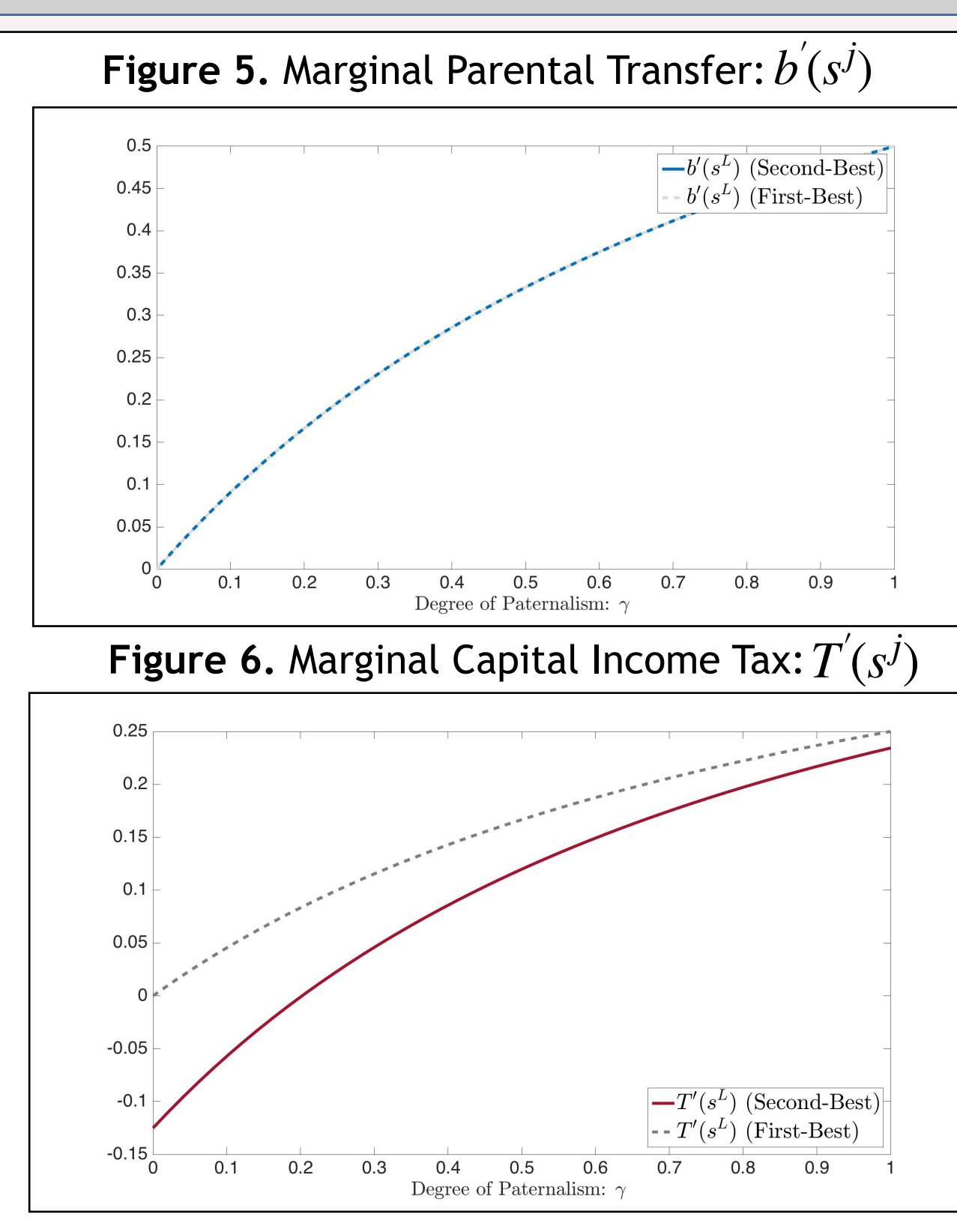
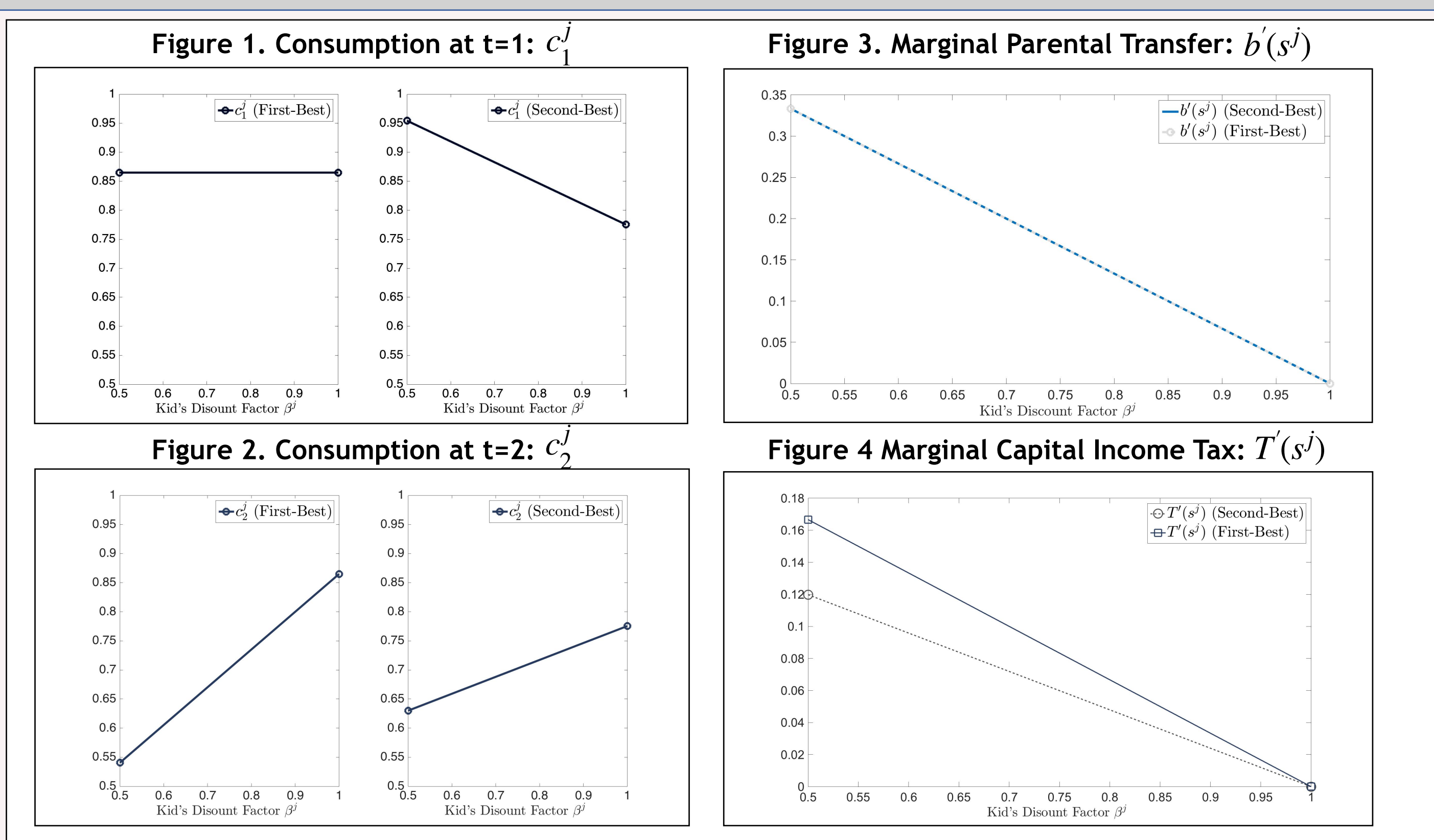
Capital Taxation with Parental Transfers

How to implement the optimal savings from the government's perspective?			Timing of Events
<ul style="list-style-type: none"> • Suppose for simplicity the government can only use capital taxes: $T(s^H), T(s^L)$. • We consider the following two cases: (i) first-best without private information; (ii) second-best where the government cannot observe beta while the parents can. 			Stage 1: Government sets the tax schedule. Stage 2: Parents set transfer schedule. Stage 3: Consumption & Saving.
Stage 3	Given tax and transfer rules, kids choose his/her consumption path: $\arg \max U^j(\beta^j)$ s.t. the budget constraints: $c_1^j + s^j \leq I^k + b(s^j)$, $c_2^j \leq s^j - T(s^j)$.	The FOCs yields: $\frac{u'(c_1^j)}{Ru'(c_2^j)} = \beta^j \left(\frac{1 - T'(s^j)}{1 - b'(s^j)} \right)$.	In equilibrium (see stage 1-2), we have $\frac{1 - T'(s^j)}{1 - b'(s^j)} = \frac{1 - \frac{\beta^{P,j} - \beta^{G,j}}{\beta^{P,j}}}{1 - \frac{\beta^{P,j} - \beta^j}{\beta^{P,j}}} = \frac{\beta^{G,j}}{\beta^j} \geq 1$.
Stage 2	The parents' optimal consumption path are given by: $\arg \max U^P$ s.t. the resource constraints: $c_1^P + c_1^H + c_1^L + s^H + s^L \leq 2I^P + 2I^k$, $c_2^H + c_2^L \leq s^H + s^L - T(s^H) - T(s^L)$.	The FOCs yields: $\frac{u'(c_1^j)}{Ru'(c_2^j)} = \beta^{P,j}(1 - T'(s^j))$.	Hence the L's saving is encouraged. The parents would set the transfer rule so that: $\beta^j \left(\frac{1 - T'(s^j)}{1 - b'(s^j)} \right) = \beta^{P,j}(1 - T'(s^j)) \implies b'(s^j) = \frac{\beta^{P,j} - \beta^j}{\beta^{P,j}}$.
Stage 1	The government's optimal consumption path are given by: $\arg \max \frac{U^{G,H} + U^{G,L}}{2}$ s.t. the resource constraints: $c_1^P + c_1^H + c_1^L + s^H + s^L \leq 2I^P + 2I^k$, $c_2^H + c_2^L \leq s^H + s^L - T(s^H) - T(s^L)$. With private information, the government faces the self-selection: $u(c_1^L) + \beta^L u(c_2^L) \geq u(c_1^H) + \beta^L u(c_2^H)$, $u(c_1^H) + \beta^H u(c_2^H) \geq u(c_1^L) + \beta^H u(c_2^L)$.	The FOCs yields: $\frac{u'(c_1^j)}{Ru'(c_2^j)} = \beta^{G,j}$.	The marginal parental transfer is positive for L and zero for H. The government would set the transfer rule so that: $\beta^j \left(\frac{1 - T'(s^j)}{1 - b'(s^j)} \right) = \beta^{G,j} \implies T'(s^j) = \frac{\beta^{P,j} - \beta^{G,j}}{\beta^{P,j}}$. The marginal capital income tax is positive for L and zero for H.

Benchmark ($u(c) = \ln c$; $\beta^H = 1.00$, $R = 1.00$, $\beta^L = 0.50$, $I^k = 1.00$, $I^P = 1.00$, $\alpha = 1.00$, $\gamma = 0.50$)

Effects of Paternalism γ on $T'(s^j)$ & $b'(s^j)$

Intuition



- In the [second-best](#) case, the [consumption for L is increased](#) to satisfy the self-selection constraint.
- More [paternalistic](#) parents, [higher marginal transfers](#) and [higher marginal taxes for L](#).
- For H, the paternalism does not affect the marginal transfers and taxes.