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Analysis of private transfers with panel fixed-effect censored model estimator

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Abstract

Understanding private transfer is important for safety-net policies because private transfer provides economic benefits similar to those of public programs such as unemployment insurance and pension. Applying Honoré's [Econometrica 60 (1992) 533] panel fixed-effect censored model estimator to Korean data, we show that private transfer is altruistically motivated and there is a strong crowding-out effect of public transfer on private transfer. We also find that low-income people suffered to different degrees during the financial crisis period of 1997 to 1998. This finding and the crowding-out effect may be taken as failures of the Korean public transfer programs during the period.

Keywords: Private transfers; Public transfers; Panel data

JEL classification: C14; C34

1. Introduction

Public transfer provides insurance against shortfalls in income but its effectiveness may be weakened by 'crowding-out' effects: public transfer may reduce private interhousehold transfers. Evidence on crowding-out effects is mixed. For example, Rosenzweig and Wolpin (1994) find little effect whereas Jensen (2002) finds large effects.

Previous studies point out two main motivations of private transfer: altruism (Becker, 1974) and

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self-interested exchange (Cox, 1987). Under the former, the crowding-out effect is large while zero under the latter because donors give private transfers to receive something in return. Evidence on the motives is mixed. Tomes (1981) supports altruism whereas Cox (1987) and Cox et al. (1998) support exchange.

The two issues, *crowding-out effects and motives of private transfers*, are related and can be answered empirically by estimating private transfer equations. The previous studies used parametric methods (tobit, probit and parametric sample-selection methods) for cross-sectional data. A major problem in these studies, discussed but not dealt with adequately, is the potential endogeneity of the public transfer in the private transfer equation because there can be omitted variables driving both transfers. Also, the parametric methods run the risk of misspecifications. In this paper, we apply a semiparametric panel fixed-effect censored model estimator in Honoré (1992) to 1996–1998 Korean data to reduce the risk of misspecifications and allow for endogeneity.

Putting our findings in advance, we found a significant and strong (almost dollar-to-dollar) crowding-out effect, implying altruistic motives for private transfers. Section 2 shows descriptive evidence, and Section 3 presents our main empirical findings.

2. Data and descriptive evidence

Our data source is the Korean Household Panel Survey for 1996–1998. Each wave covers August to July and the 1998 wave spans the infamous financial crisis. We created two balanced panel data (96/97 and 97/98) out of the three waves, and the number of households for each panel is 3692 and 3674, respectively. Table 1 shows averages for 97 and 98 (96 is similar to 97 and so omitted). The data are separated into two groups of zero and positive private transfers. Transfers and incomes are

Table 1
Sample means based on private transfer receipt

	97 No	97 Yes	98 No	98 Yes
Pre-transfer income	812.90	461.39	625.60	325.21
Self-employed	0.31	0.10	0.31	0.09
Agriculture/fisheries/part-time	0.19	0.37	0.20	0.34
Unemployed/non-paid	0.12	0.40	0.14	0.45
Household size	4.01	2.89	3.99	2.85
No. children below 15	1.09	0.42	1.04	0.50
No. elderly above 60	0.15	1.06	0.16	1.07
Age of household head	47.32	59.08	47.81	58.71
Junior high school graduate	0.17	0.17	0.17	0.17
Senior high school graduate	0.40	0.19	0.42	0.18
College graduate or above	0.22	0.12	0.22	0.16
Female head	0.07	0.24	0.07	0.26
Received public transfers	0.06	0.27	0.12	0.35
Public transfer amount	6.47	6.38	8.02	9.37

Table 2
Private transfer receipt 96–98

		1997					1998		
		0	1	Total			0	1	Total
1996	0	73.3%	9.2%	82.5%	1997	0	69.7%	10.4%	80.1%
	1	6.8%	10.7%	17.5%		1	8.3%	11.6%	19.9%
	Total	80.1%	19.9%	100%		Total	78.0%	22.0%	100%

yearly per capita at constant 1996 prices in 10,000 Korean won (alternatively, the unit may be taken as ~$10, taking 1000 Korean won as $1).

Due to the financial crisis, wave 98 is much different from wave 97: pre-transfer income is substantially lower; unemployment rate and the percentage (as well as the amount) who received public transfers increase while the other variables are stable over 97–98. The original data have far more variables than those in Table 1 but only time-variant variables are relevant to our estimator, and so are listed in the table.

Table 2 presents the transition matrices for private transfers. Among those who did not receive private transfers in the starting year, slightly more people received private transfers in 97/98 than in 96/97. During 96–98, the private transfer-receiving group has increased from 17.5% to 19.9% to 22%.

In Table 3, details on private transfer receipt for 97/98 are provided. As observed from the table, the tumultuous financial crisis period 97/98 is more interesting than 96/97, showing bigger changes in transfers. In Table 3, the numbers in parentheses are the percentage with the 1997 amount as 100; for example, in cell (0,0), the pre-transfer income 636 in 1998 is 75% of the pre-transfer income 839 in 1997. Looking at the total incomes, the following four income groups emerge where the percentage out of the population comes from the right-half of Table 2.

Table 3
Sample means based on private transfer receipt 97/98

	0 in 1998			1 in 1998		
		1997	1998		1997	1998
0 in 1997	Age	46.4	47.0	Age	53.4	52.3
	Pre-transfer income	839	636 (75)	Pre-transfer income	643	443 (69)
	Public transfers	6.0	7.0	Public transfers	9.7	9.1
	Private transfers	0.0	0.0	Private transfers	0.0	63
	Total income	845	643 (76)	Total income	653	515 (79)
1 in 1997	Age	52.6	54.2	Age	63.8	64.4
	Pre-transfer income	675	544 (81)	Pre-transfer income	303	221 (73)
	Public transfers	8.5	16.0	Public transfers	4.8	9.6
	Private transfers	94	0.0	Private transfers	131	135
	Total income	778	560 (72)	Total	439	366 (83)

Group (% population)	Cell	Head age	Total income in 97	Income lost in 98
Lower (11.6%)	(1,1)	64	439	17%
Mid-lower (10.4%)	(0,1)	53	653	21%
Mid-upper (8.3%)	(1,0)	53	778	28%
Upper (69.7%)	(0,0)	47	845	24%

The lower group with age 64 lost 17% of its income during the financial crisis, which is, however, the smallest loss among the four groups due to the contribution of private transfers. The mid-lower group with age 53 lost 21% of its income whereas the mid-upper group with the same age sustained the largest 28% loss. Finally, the upper group with age 47 (the youngest) lost 24%.

In magnitude, private transfers are far greater than public transfers. The public transfer amount does not vary across the four groups as much as the private transfer does. Comparing the percentage loss in private transfers with those in pre-transfer and total incomes, it is essentially the private transfer amount that determined the 1998 income loss percentage. The upper group does not contribute to our panel estimator because its private transfers are all zero. Among the remaining three groups that occupy about the same percentage of the population as in the right half of Table 2, the combined changes in public transfers and private transfers are most drastic in the opposite directions for the mid-upper group as cell (1,0) in Table 3 shows. This seems to be the driving force for the substantial crowding-out effect shown in the next section.

3. Main empirical findings

Table 4 presents the results of an LSE-based estimator ('FIX') in Honoré (1992) for panel fixed-effect censored model. For the sake of comparison, we also show panel random-effect censored model estimates under joint normality ('RAN'). FIX has two advantages over RAN: it does not

Table 4
Panel censored model estimation; t-values in $(\cdot)$

	96/97, fixed	96/97, random	97/98, fixed	97/98, random
1	− 4.497 (−0.41)	39.05 (0.43)	− 24.91 (−2.06)	74.05 (0.95)
Public transfers	− 0.998 (−3.33)	− 0.742 (−4.27)	− 1.053 (−1.08)	− 0.711 (−5.31)
Pre-transfer income	− 0.002 (−0.11)	− 0.013 (−1.67)	− 0.007 (−0.38)	− 0.023 (−2.60)
No. children below 15	57.67 (1.17)	−13.82 (−1.61)	70.79 (1.96)	−5.022 (−0.69)
No. elderly above 60	− 0.529 (−0.04)	35.66 (4.89)	8.45 (0.81)	30.75 (5.01)
Household size	− 66.52 (−1.80)	− 26.61 (−4.51)	− 58.19 (−1.99)	− 33.35 (−6.35)
Junior high school graduate	− 108.27 (−1.21)	− 2.327 (−0.12)	90.75 (0.71)	30.782 (1.97)
Senior high school graduate	− 113.40 (−1.06)	− 26.28 (−1.32)	− 107.98 (−0.82)	1.599 (0.10)
College graduate above	11.51 (0.23)	43.22 (1.85)	162.61 (3.15)	79.18 (4.06)
Self-employed	− 35.94 (−0.40)	14.84 (0.80)	62.43 (0.42)	− 11.07 (−0.70)
Agriculture/fishery/part-time	91.18 (1.25)	116.58 (6.14)	143.84 (1.12)	96.66 (5.99)
Unemployed/non-paid	101.06 (1.38)	185.04 (8.89)	197.86 (1.61)	161.22 (9.39)

specify the error term distribution of the model and public transfer is allowed to be arbitrarily related to the model error term through the time-invariant part. Thus, we base our interpretation mostly on FIX. Originally, Honoré (1992) imposed restrictive assumptions on the error terms for FIX, which were, however, substantially relaxed later as explained in Lee (2002). Fixed-effect estimators tend to yield more insignificant estimates than random effect estimators because temporal variation of regressors tends to be small.

Our most important variable, public transfer, shows a significant and almost dollar-to-dollar crowding out effect in FIX, implying altruistically motivated private transfers while in RAN, the magnitude is about 0.71 to 0.74. Originally, we used ln (private transfer) and ln (public transfer) to have the FIX estimates around 0.35, but here, transfer levels are used at the recommendation of a referee—the number 0.35 with log variables does not contradict the number 1 with level variables because the relative magnitude (i.e. percentage) of $1 in private transfer is far smaller than that of $1 in public transfer.

Private transfers increase with the number of dependents (below age 15 or above 60), although insignificant except on one occasion. This contrasts with fairly significantly negative estimates for household size, which is understandable because household-size increase means more bread-earners with the given number of dependents. Junior and senior high school graduates receive less than college graduates. This is consistent with the responsiveness of transfers to liquidity constraints where education raises permanent income, which in turn raises consumption (Cox, 1990). Households whose heads are in agriculture/fisheries/part-time or unemployed receive more private transfers, which is insignificant in FIX while significant in RAN. This further supports altruism because these households are less likely to give something in exchange for the private transfers they receive. The unemployed also receive more private transfers, which is again insignificant in FIX and significant in RAN.

In Section 2, we classified the households with private transfers in 97/98 into four groups. There, we saw that the majority (70%) did not receive any private transfers in 97/98. The other relatively poor 30% were affected by different degrees: 17, 21 and 28% loss in the total income, respectively, that were largely due to private transfers. The above strong (almost dollar-to-dollar) crowding-out effect implies that public transfers did not change the total income. The differences in income losses across different groups and the ineffectiveness of the public transfer suggest failures of the Korean government's public transfer policy.

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