Supplementary Materials

1. Summary of cash transfer programs and their effects on child health

Table A1. Cash transfer programs and child health

Study	Country	Name of the Program	Recipient	Eligibility or conditions	Monthly benefits/ estimated % of household expenditure	Age of children	Effect size
Pension programs							
Case (2004)	South Africa	Old-age pension program	Eligible elderly	Individual eligible age. Male: 65; Female: 60	370 Rands (in 1993), twice the median per capita income in rural areas	0–60 months	+1 SD (HAZ) or 5 cm (height)
Duflo (2003)	South Africa	Old-age pension program	Eligible elderly	Individual eligible age. Male: 65; Female: 60	370 Rands (in 1993), twice the median per capita income in rural areas	6–60 months	Woman for girls: +1.16 SD (HAZ); +1.19 SD (WHZ)
Other cash transfer programs							
Baulch (2010)	Bangladesh	*Primary Education Stipend*	Women	School enrollment and attendance.	Unclear	0–12 years old	+0.4 SD (HAZ)
Morris et al. (2004)	Brazil	*Bolsa Alimentac¸a˜o*	Unclear	Condition for: 0–7 years old, PHC, GMP, immunisation.	8%	0–7 years old	No significant results were found
Attanasio & Mesnard (2006)	Colombia	*Familias en Accio´n*	Women	Condition for: 0–6 years old, PHC.	24%[a]	0–24 months	+0.16 SD (HAZ)
International Food Policy Research Institute (2003)	Honduras	*Programa de Asignacio´n Familial*	Women	Condition for: 0–3 years old, PHC	4%	0–60 months	No significant results were found
Sinha &Yoong (2009)	India	*Apni Beti Apna Dhan*	Women	School enrollment and attendance.	Unclear	0–11 years old	+0.34 SD (HAZ)
Paxson & Schady (2010)	Ecuador	*Bono de Desarrollo Humano*	Women	Condition for: 0–6 years old, PHC; school enrollment.	US $15 (in 2003), 8.5%[b]	0–24 months	+0.11 SD (HAZ)
Gertler (2004)	Mexico	*Oportunidades* (PROGRESA)	Women	Condition for: 0–7 years old, PHC, GMP, immunisation ; school enrollment and	20% to 30 %	0–35 months	+ 1 cm (height); -25.3 % (anemic)

				attendance.			
Rivera et al. (2004)	Mexico	*Oportunidades* (PROGRESA)	Women	Condition for: 0–7 years old, PHC, GMP, immunisation; school enrollment and attendance.	Rural: 25%	0–6 years old	Rural: +0.32 SD (HAZ) or 1.1 cm (height)
Leroy et al. (2008)	Mexico	*Oportunidades* (PROGRESA)	Women	Condition for: 0–7 years old, PHC, GMP, immunisation; school enrollment and attendance.	Urban: 15% to 20%	0–6 years old	Urban: +0.41 SD (HAZ) or +1.53 cm (height); +0.46 SD WHZ or +0.76 kg (weight)
Maluccio (2009)	Nicaragua	*Red de Protecciо́n Social*	Women	Condition for: 0–5 years old, PHC, vitamin supplementation, immunisation.	18%	0–60 months	-5.5% (stunting)

6 [a] Estimated from Attanasio & Mesnard (2006). [b] Estimated from Paxson & Schady (2010). Abbreviation: GMP: Growth monitoring and promotion; PHC: Preventive health checkups

2. Variable summary statistics

Table A2. Summary statistics

Variables	Total			2012			2014		
	Obs.	Mean	S.D.	Obs.	Mean	S.D.	Obs.	Mean	S.D.
Dependent variable									
HAZ	6972	-1.06	2.07	3603	-1.18	2.07	3369	-0.95	2.06
WAZ	5409	-0.28	1.59	2778	-0.31	1.55	2631	-0.25	1.62
Key independent variable									
NRPS (1=Yes)	6972	0.20	0.40	3603	0.15	0.36	3369	0.25	0.43
Number of pensioners	6972	0.26	0.57	3603	0.20	0.50	3369	0.33	0.63
Control variables									
Gender (1=boys)	6972	0.53	0.50	3603	0.53	0.50	3369	0.53	0.50
Age	6972	7.79	4.45	3603	7.78	4.51	3369	7.81	4.39
Number of siblings	6972	0.90	0.97	3603	0.87	0.93	3369	0.94	1.01
Number of elderly	6972	0.52	0.76	3603	0.47	0.74	3369	0.57	0.79
Log (family income per capita)	6972	8.49	1.22	3603	8.35	1.23	3369	8.65	1.18
Parents' age	6972	34.95	6.78	3603	34.94	6.77	3369	34.95	6.79
Parents' education (years)	6972	6.63	3.42	3603	6.54	3.42	3369	6.73	3.42
Parents' height (cm)	6972	157.89	31.04	3603	156.32	34.35	3369	159.58	26.97
Parents' weight (kg)	6972	58.30	13.75	3603	57.59	14.78	3369	59.06	12.51
Parents' migration (1=Yes)	6972	0.41	0.49	3603	0.41	0.49	3369	0.40	0.49
Parent height missing (1=Yes)	6972	0.04	0.19	3603	0.05	0.21	3369	0.03	0.16
Parent weight missing (1=Yes)	6972	0.04	0.19	3603	0.05	0.21	3369	0.03	0.16

3. The prevalence effect and severity effect of the NRPS on child disease

Previous studies have shown that children of lower income families are more likely to suffer from health shocks and suffer greater after disease (Currie & Stabile, 2003; Suris, Michaud, & Viner, 2004). Cash transfers may reduce the prevalence of disease (prevalence effect) and buffer the adverse effect of health shocks on child health (severity effect). Following existing studies (Apouey & Geoffard, 2013; Goode & Mavromaras, 2014), we examined the prevalence effect and severity effect of the NRPS on child disease through probit regressions and linear regressions.

Table A3 presents the estimates of prevalence effect and severity effect of the NRPS on child disease and health shocks. The coefficients in column (1) and column (2) are not significant, which imply that the NRPS is not able to reduce the prevalence of child disease. The interaction term of child disease and the NRPS in column (3) and column (4) are not significant, although these coefficients are positive. For the interaction term of child hospitalization and the NRPS, similar results are found in column (5) and column (6), showing that the NRPS cannot alleviate the negative effect of diseases or health shocks on child health. The non-significant prevalence effect and severity effect of the NRPS could be mainly because of the low amount of the NRPS pension.

Table A3. Prevalence effect and severity effect of NRPS

Variables	Prevalence Effect		Severity Effect			
	(1)	(2)	(3)	(4)	(5)	(6)
	Disease	Hospitalization	HAZ	WAZ	HAZ	WAZ
NRPS (1=Yes)	0.004	-0.009	0.194**	0.139*	0.168**	0.142*
	(0.017)	(0.016)	(0.085)	(0.076)	(0.082)	(0.073)
Disease (1=Yes)			0.075	-0.092*		
			(0.061)	(0.047)		
Disease x NRPS			0.045	0.053		
			(0.132)	(0.109)		
Hospitalization (1=Yes)					0.094	-0.068
					(0.065)	(0.049)
Hospitalization x NRPS					0.170	0.063
					(0.143)	(0.115)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Province dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6960	6959	6961	5400	6961	5400
Pseudo R^2	0.058	0.060	0.107	0.136	0.136	0.107

Note: * p<0.1, ** p<0.05, *** p<0.01; Huber-White robust standard errors are in parentheses.

4. DD, PSMDD and IV regressions

The difference-in-difference (DD) approach in this study calculates the effect of social pensions (treatment) on child health (outcome) by comparing the average change over time in the outcome variable for the treatment group and the control group, which helps to eliminate unobserved heterogeneity if the two groups have common trends over time. To meet this precondition of the DD approach, we further adopted a propensity score matching with difference-in-difference (PSMDD) strategy to generate similar treatment and control groups in the baseline survey and then obtain the effect of the NRPS more accurately through DD analysis. Specifically, the difference-in-difference approach is applied as follows:

$$Z = \gamma_0 + \gamma_1 t + \gamma_2 T_i + \gamma_3 (t \times T_i) + X_i^{'} \gamma + \lambda + \varepsilon_i \tag{3}$$

where t represents time periods before and after treatment. Since the NRPS policy was implemented from 2009, we dropped those observations whose family already had a pension receiver in 2012 and generated a balanced panel date for DD analysis. Thus, the baseline survey of DD approach is set in 2012 when t equals 0, otherwise t equals 1. T represents the treatment for a family. Specifically, T equals 1 if a family member received the NRPS pension in year 2014 and equals 0 otherwise. X is a set of control variables and λ captures the child-level fixed effect. The coefficient γ_3 captures the effect of the NRPS on child health in DD approach. In the PSMDD strategy, we first matched the treatment group and control group in 2012 by using the nearest neighbor matching method (without replacement) and then dropped those observations that were not in the common support and generated another balanced panel dataset for DD analysis.

Furthermore, this study has also applied an IV approach to address possible endogeneity problems. The IV we used was the interaction term of the proportion of other households which had NRPS pensioners in the same community (NRPS proportion) and whether the household had an age qualified member (eligible household). The main reason we generated and used this IV is because of the eligibility of social pensions. At least two conditions are required to receive the NRPS pensions in rural China. First, communities should have already started the policy. Second, the age of pensioners must be 60 or over. On the one hand, a higher proportion of households with NRPS pensioners generally represents a longer time the policy has been implemented in a community, which could be correlated with the NRPS participation probability of the elderly. Meanwhile, an increased number of pensioners in other families may have a "demonstration effect" that induces more older adults to become NRPS pensioners. On the other hand, the presence of an age-qualified family member could also correlate with the probability of having a NRPS pensioner in household. Moreover, the eligibility of social pensions is not likely to be directly associated with child health (Duflo, 2003). Although the IV may affect child health not only through the NRPS but also through other unosbservable factors, it is difficult to test exogeneity without additional instruments, and we still used the IV approach as a robustness check.

The estimates of DD, PSMDD and 2SLS are reported in Table A4. It can be seen that results of the three approaches are consistent with the OLS estimates in this study. Specifically, the interaction terms in the DD approach are positively significant. Figure 1 shows that the kernel density of treatment group and control group are well balanced after matching and the results of PSMDD also support the positive effect of social pensions on child health. In terms of 2SLS regressions, the interaction terms of the NRPS proportion and eligible household are positively and significantly associated with the probability of the presence of pensioner in child's family in the first stage regression. The F statistics on the instrument in the first stage regressions are much greater than 10, indicating that the IV is not weak. The estimated results of the second stage regressions of 2SLS also show that the NRPS is positively associated with the HAZ and WAZ of children, which are also in line with the estimates of OLS regressions.

Table A4. Estimates of DD, PSMDD and 2SLS

Variables	DD		PSMDD		2SLS	
	(1)	(2)	(3)	(4)	(5)	(6)
	HAZ	WAZ	HAZ	WAZ	HAZ	WAZ
t×T	$0.233^{\dagger}$	0.231^{**}	$0.237^{\dagger}$	0.254^{*}		
	(0.157)	(0.111)	(0.162)	(0.142)		
NRPS (1=Yes)					$0.171^{\dagger}$	0.180^{*}
					(0.122)	(0.107)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Province dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3374	2646	3300	2568	6972	5409
R^2	0.052	0.016	0.044	0.013	0.106	0.135

Note: † p<0.15, * p<0.1, ** p<0.05, *** p<0.01; Huber-White robust standard errors are in parentheses. Nearest neighbor matching is used and matching variables are those factors may affect NRPS participation of the elderly, including number of elderly, average age of elderly, average schooling years of elderly, log of family income per capita, number of child, whether the elderly live with their children.

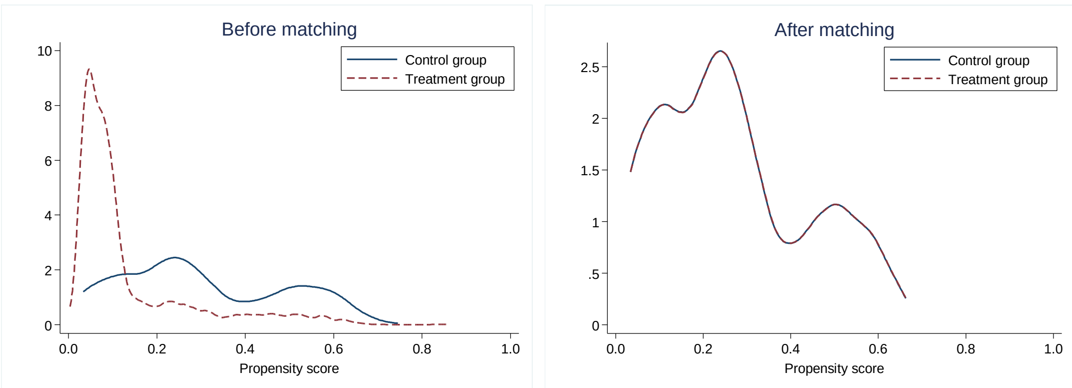

Figure A1. Kernel density of treatment group and control group: before matching and after matching