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Assessing the expenditure and income effects of the Philippines' Conditional Cash Transfer Program

by

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Abstract

Evaluation studies on conditional cash transfers (CCT) in the Philippines found small if not insignificantly different from zero effects on household consumption. We use propensity score matching to examine how recipients made use of the money they received, taking into account possible changes in recipient behavior. We find evidence of crowding in—CCT households receive higher transfers from other domestic sources as a positive spillover from becoming CCT beneficiaries Poor CCT households tend to lower their dissavings while non-poor beneficiaries become less indebted. We also find evidence of lower income, lower wages, and lower work-related expenses.

JEL Codes: D12, I38, H53

Key words: Conditional cash transfers, household income and consumption, Philippines

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I. Introduction

Conditional cash transfer programs have become increasingly popular in developing countries following evidence from Latin America that such programs have significantly improved health and education outcomes in the short run and reduced poverty in the long run (Gertler, 2004; Schultz, 2004; Behrman et al., 2005; Oliviera, 2005; Fernald et al., 2009).

While policy makers tend to focus on short run gains that come directly from effective implementation of the conditionalities – for example, school enrollment and outpatient care for children and women - household behavioral responses to the cash transfer are equally important policy concerns. Households may need to increase spending on items that improve compliance with the conditionalities. For example, transportation expenditures or other schooling related expenses (uniforms, school allowances) can increase if school enrollment is required (Attanasio and Mesnard, 2006). Or, health care spending can increase if there are conditions on health care utilization (Lagarde et al., 2009).

CCTs were also found to have intertemporal implications on household consumption. In Mexico, for example, households receiving CCTs were found to be less indebted than comparable households (Angelucci and de Giorgi, 2009). Thus, CCTs appear to function as an alternative consumption smoothing mechanism to loans.

However, CCTs can also crowd out other transfers, whether from private sources or other government transfer programs. Nielsen and Olinto (2007) using data from Nicaragua and Honduras, present evidence of crowding out of private food and NGO transfers when CCTs are large. Moreover, they found that remittances were unaffected by the CCTs.

These household behavioral responses triggered by CCTs need to be examined when assessing the overall cost-effectiveness of the program. CCTs tend to be large-scale programs and expensive, thus, policy makers need to be assured that there are overall net gains from the program, after accounting for household behavioral responses triggered by the cash transfer. On one hand, there are income-related behavioral responses, for example, children staying in school rather than working in farms (Skoufias and Parker, 2001; Del Carpio and Marcours, 2009; Reyes, 2013), whether adults choose to work longer hours (Orbeta and Paqueo, 2013) or reduced hours (Foguel and Barros, 2008; Borraz and González, 2009; Tavares, 2010), whether adults shift from formal to informal employment (Teixeira, 2010) or vice versa (Skoufias and di Maro, 2008), whether income sources shift from wage employment to entrepreneurial activities (Gertler et al., 2006), or whether transfer patterns are altered (Teruel and Davis, 2000; Hernandez et al., 2009).

On the other hand, cash transfers can alter household spending patterns. Aside from increasing spending on items that are in direct support of the conditionalities – that is, education and health - CCTs could also influence spending on other products such as tobacco and alcohol. CCTs could also impact

on spending items with intertemporal implications, such as loan payments, saving and investment. For example, in Mexico, households receiving CCTs were found to have a higher likelihood of investing in livestock (Angelucci and de Giorgi, 2009; Rubalcava, 2009). Angelucci et al. (2011) found that program participants increased expenditure on durable items, albeit small, and had a reduction in stock of debt amounting to about 17 per cent of the monthly transfer.

Given the wide range of possible behavioral responses, policy makers would desire that adverse household behaviors negating or mitigating direct gains from the CCT program are minimal. Conversely, household behaviors that reinforce direct CCT gains are ideally fortified. An assessment of the cost-effectiveness of CCTs would, thus, require research on how households behave in response to the cash transfers. This paper attempts to address this policy concern.

II. Overview of the Philippine Conditional Cash Transfer Program

In the Philippines, a CCT program known as Pantawid Pamilyang Pilipino Program (4Ps) was first implemented in 2007 on a pilot basis and covered 4,600 households. As of June 2014, 4Ps operates nationwide in 79 provinces covering 1484 municipalities and 143 cities in all 17 regions nationwide, with 4,090,667 registered households (DSWD, 2014).

4Ps provides two types of financial grants: (i) a health grant of 500 pesos (11.24 USD) per month per household or 6000 pesos (134.91 USD) per year; and (ii) an education grant of 300 pesos (6.75 USD) per month for 10 months for children ages 3-14 years old, up to a maximum of 3 children per household. Thus, each household can receive 1400 (31.48 USD) pesos per month (500 pesos per month for health and 900 pesos (20.24 USD) per month for education) for 5 years as long as conditions are satisfied.

To qualify for 4Ps, a household must reside in a municipality that is designated as geographically "poor," on the basis of poverty incidence rates given by the 2003 Small Area Estimates of the National Statistical Coordination Board.

Furthermore, within these "poor" municipalities, households were tagged as "poor" through the National Household Targeting System for Poverty Reduction (NHTS-PR). The NHTS-PR uses a proxy means test, where household incomes are predicted using observable indicators. Households with predicted incomes that fall below the official poverty threshold are considered poor and would therefore be a target or potential CCT beneficiary. Finally, those households with at least one pregnant woman and/or children aged zero to 14 years of age and that are willing to comply with the program's conditionalities are defined as CCT-eligible.

The 2003 FIES and 2003 Labor Force Survey (LFS) were used to construct the proxy means test. The variables included ownership of assets, type of housing and living conditions, sanitation, education and occupation of the household head, and sources of income of the families (Fernandez, 2007).

To avail of the cash grants beneficiaries should comply with the following conditions:

1. Pregnant women must avail pre- and post-natal care and be attended during childbirth by a trained health professional;

2. Parents must attend Family Development Sessions;

3. 0-5 year old children must receive regular preventive health check-ups and vaccines;

4. 6-14 years old children must receive deworming pills twice a year.

5. All child beneficiaries must enroll in school and maintain a class attendance of at least 85 per cent per month.

Evaluation studies of the 4Ps suggest that there had been improvements in some key outcome indicators although only scant increases in household consumption, if at all. Chaudhury et al. (2013), using data from an impact evaluation survey conducted by the World Bank, found reduced stunting among children ages 6-36 months of CCT beneficiary households. Chakraborty (2013) noted the findings of a 2011 World Bank study where prenatal care was sought more in provinces with 4Ps during the early stages of program implementation. Reyes et al. (2013) reported that CCTs have led to increased school participation among children 6-14 years old, but no effect on older children (15-18 years old). Applying propensity score matching technique on 2011 round of the APIS, Tutor (2014) found that CCTs have no impact on per capita total expenditures, but seem to have increased monthly expenditures on carbohydrates and clothing and the shares of education and clothing in total expenditures.

In the Philippines, findings on the impacts of CCTs on consumption deviate from those in the international literature. Here, beneficiaries are found to have not increased total consumption (DSWD, 2014; Tutor, 2014) while in many other developing countries, CCTs are found to raise household consumption. Fiszbein et al. (2009) in a review of evaluation studies report that CCTs have had a positive impact on consumption in Brazil, Cambodia, Colombia, Ecuador, Honduras, Mexico and Nicaragua. This begs the question of what Philippine households do with the cash transfers they receive.

In this paper, we further examine the results of existing studies on the Philippines and ask whether the cash transfers could have affected other items, particularly, those with intertemporal implications. These include saving, investment, loan payments, and stock of outstanding debt. We also ask if the relative contributions of various income sources have changed - is wage income lower? Is entrepreneurial income higher? Are transfers crowded out?

We use data from a special, nationally representative survey conducted by the Philippine Center for Economic Development from April to May 2014. The main purpose of the survey was to profile the shocks that households experience and

assess whether the country's social protection programs have helped households cope with these shocks. The survey provides detailed household income and expenditure data from CCT beneficiary households that are needed for our multivariate analysis.

III. Theoretical Framework

Assume that total income of a CCT-eligible household is defined as:

$$Y = Y_w + Y_e + T$$

where Y is total income, Y_w is wage income, Y_e is income from entrepreneurial activity, and T refers to net transfers received by the household. Wage income, Y_w can be decomposed as follows:

$$Y_w = \sum_i w_i H_i$$

where w_i is the wage rate per unit of time working, H_i, for each household member *i*. Net total transfers, in turn, can be defined as:

$$T = T_o - T_g$$

*w*ith T_o referring to transfers received by the households, while T_g are transfers given by the household to other households. Total income is thus:

$$Y = \sum_i w_i H_i + Y_e + T_o - T_g$$

where C is consumption spending, S is savings and I refers to investments. Defining L as the outstanding stock of loans and r as the interest rate, some amounts are therefore spent on interest payments on outstanding loans, rL and towards the retirement of debt, $\Delta L = L_t - L_{t-1}$.

Total expenditures are defined as:

$$E = C + S + I + rL + \Delta L$$

and the household's budget constraint is thus defined as

$$\sum_i w_i H_i + Y_e + T_o - T_g = C + S + I + rL + \Delta L.$$

We now consider the introduction of a CCT program. If the same household were to become an actual CCT program beneficiary, its total transfers would include the conditional cash transfers, T_{cct}, so that its total income, indexed by the prime sign, is defined as:

$$Y' = \sum_i w_i' H_i' + Y_e' + T_o' + T_{cct} - T_g'$$

Its expenditures are again indexed by the prime sign, and the corresponding household budget constraint is defined as follows:

$$\sum_i w_i' H_i' + Y_e' + T_o' + T_{cct} - T_g' = C' + S' + I' + rL' + \Delta L'$$

Subtracting the household's budget constraint without CCT benefits from that with CCT benefits yields an accounting of possible uses of conditional cash transfers:

$$T_{cct} = (C' - C) + (S' - S) + (I' - I) + (rL' - rL) + (\Delta L' - \Delta L) - \left(\sum_i w_i' H_i' - \sum_i w_i H_i\right) - (Y_e' - Y_e) - (T_o' - T_o) + (T_g' - T_g)$$

Thus, the CCT transfers can enable a household to increase consumption, savings/investments, and or decrease outstanding debt and catch up with loan interest payments. However, we also note that transfers can enable it to reduce work effort thereby reducing wage income and or reduce entrepreneurial income if spending items are not increased. Moreover, conditional transfers can allow the household to weather reductions in transfers from other households or increase its ability to make transfers to others. Since these income and expenditure effects cannot be observed for the same household (who is either an actual CCT beneficiary or not), we need to construct the appropriate comparison groups for the actual CCT beneficiaries.

IV. Estimation Methods

We estimate differences in $C, rL, S, I, \Delta L, Y_w, T_o, T_g$ across CCT household beneficiaries and a number of reference groups. We note that one important criticism against the 4Ps concerns program targeting. Prior to program implementation but using the proxy means test results used as basis for identifying program beneficiaries, Fernandez (2007) estimated the 4Ps' exclusion error (that is non-coverage of the poor) at 33 per cent and the inclusion error (that is coverage of the non-poor) at 26 per cent. We exploit inclusion and exclusion errors and utilise matching methods to compare segments of the CCT household beneficiaries with various comparable non-CCT households.

Given these program implementation problems, we propose two control groups:

(C_1) non-CCT households that are comparable to actual CCT households (which include poor and non-poor due to inclusion errors and excludes some of the poor); and

(C_2) non-CCT households that are poor ("excluded poor"), based on reported incomes.

Two treatment groups can also be defined:

(T_1) actual CCT households (which include poor and non-poor due to inclusion errors and excludes some of the poor); and

(T_2) CCT households that are poor, based on reported incomes.

We first undertake two sets of comparisons: (i) T_1 vs. C_1 and (ii) T_2 vs. C_2.
To further understand the T_1-C_1 comparison, we propose a third comparison:

(C_3) non-poor CCT households ("included non-poor"); and

(T_3) non-poor, non-CCT households.

We note that the inclusion errors could potentially produce misleading statements regarding program effects. Specifically, the impacts on the non-poor CCT households may be opposite those of the poor, thereby neutralizing what could be true program effects on the poor. However, they may be in the same direction, which would tend to bias the measured impacts on the poor upwards. We attempt to isolate the effects of the inclusion errors through this third comparison.

We use Propensity Score Matching to generate the matched samples for the three comparison groups and estimate average treatment effects on the treated (ATT). Due to these inclusion and exclusion errors, we are able to find observations for C_3 and T_2 from among our CCT sample.

We further note that although from an individual household's point of view, program placement is exogenous, we argue that there could be endogenous program placement at the province level as reflected in the differences in the timing of participation across provinces. Although 4Ps has been rolled out as a national program beginning 2007, program reports have indicated that there remains poor municipalities in selected provinces that have failed to fully participate in the 4Ps. Put differently, our random samples of treatment and control units may not be balanced, owing to different CCT participation rates in the survey areas. Moreover, even if the participation rate is 100 per cent in a given area, the excluded poor (who are now considered as “controls” here) may still not have the same average characteristics as the actual beneficiaries (treatment units in $T_1 - C_1$ comparison). Thus, we argue that after controlling for observables and endogeneity, PSM provides a less biased estimate of the causal impact than Ordinary Least Squares (Caliendo and Kopeinig, 2008).

The basic variables used to generate the matched samples are the observable characteristics used for the proxy means test. We generated alternative propensity scores by augmenting the proxy means test covariates with provincial dummies to account for differences in participation level and timing. To assess the validity of the matching, we used the mean bias and pseudo *R*-squared[1] for each comparison (as suggested in Caliendo and Kopeinig, 2008).

Propensity scores were first generated for the entire sample, then CCT eligible families were defined as those with pregnant women or children below 14 years old. Matched samples were then identified following the definitions for T_1-T_3 and C_1-C_2.

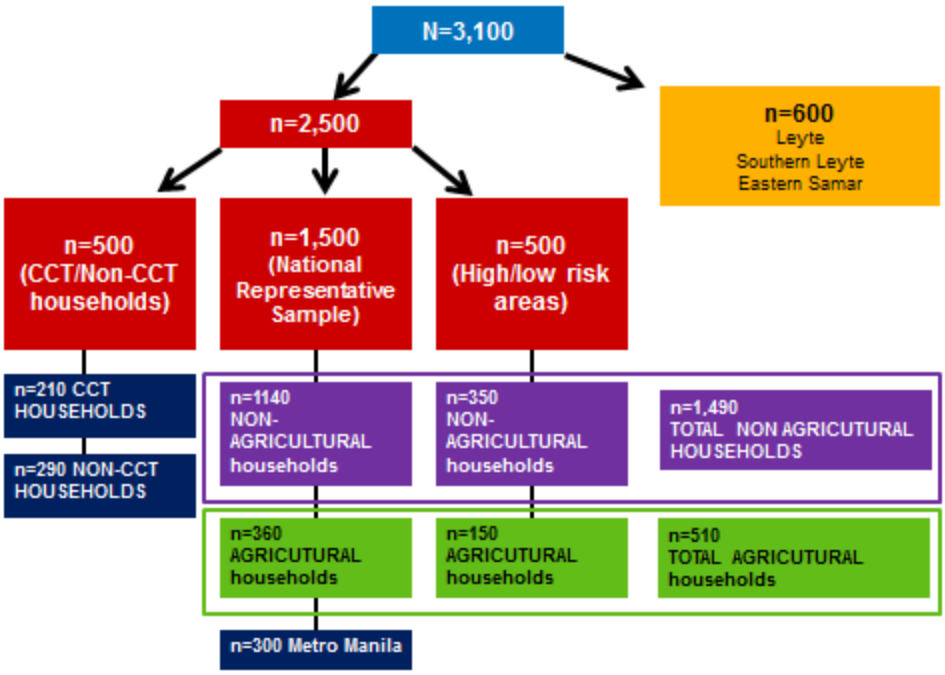
To compute the ATT, we employed kernel matching with bandwidth 0.03. Our results are consistent with alternative matching algorithms: kernel matching with bandwidth 0.05, radius matching with caliper sizes 0.01, 0.02 and 0.03. We present the results of these alternative matching algorithms in the Appendix. The fixed bandwidth and caliper sizes ensure that the matched control units have very close propensity scores to the treatment unit. Whereas radius matching treats all comparison units equally, in contrast, kernel matching attaches greater weights to those comparison units closest to the treatment unit.

V. Data, Variable Definition, and Descriptive Statistics

The PCED Social Protection Survey had a total sample size of 3,100 households, consisting of a nationally representative sample of 1,500 households augmented by 3 sub-samples that were drawn to facilitate analysis on various social protection research questions. We oversampled 500 households consisting of both CCT and non-CCT household beneficiaries, 500 households consisting of households residing in areas that are high- and low-risk for natural disasters such as typhoons and earthquakes, and 600 households from Leyte, Southern Leyte, and Eastern Samar which were the provinces that were most affected by the typhoon Haiyan in November 2013. From this full sample, we obtained 609 CCT household beneficiaries - 196 from the nationally representative sample, 210 from the CCT/non-CCT sub-sample, 102 from the high/low-risk sub-sample, and 101 from the Haiyan sub-sample. For this analysis, sampling weights had to be constructed so that each CCT household beneficiary reflects is true weight relative to the population. Figure 1 illustrates the sampling scheme.

[1] A low *R*-squared (near zero) is desired. This indicates that after controlling for observable covariates, the logit model very little of variation in treatment assignment, which is what happens when the assignment is truly random.

Figure 1. Sampling Scheme of the PCED Social Protection Survey



In our analysis, a CCT household beneficiary is defined as one that has received a cash transfer from 4Ps at least once. We note that the implied exclusion and inclusion errors are 33 and 38 per cent, respectively. Compared to the estimates of Fernandez (2007), exclusion errors appear to have remained steady while inclusion errors increased substantially, possibly owing to the recent aggressive scale up of program implementation.

The mean amount of 4Ps transfers per year was estimated at 11,201 pesos (251.85 USD). This is slightly higher than mean CCTs implied by the 2013 Annual Poverty Indicator Survey (about 8,000 pesos per year or 179.88 USD). One possible explanation for this difference is the one-year gap between the APIS and PCED Surveys. The amount of 4Ps transfers is about 12 per cent of per capita consumption among CCT beneficiaries. Relative to other countries, this share is large (see Table 1).

Table 1. Ratio of transfers to per capita consumption, various countries

Country	Program	Transfer (% of per capita expenditures)
Bangladesh	Female Secondary School Assistance Program	0.6
Cambodia	Japan Fund for Poverty Reduction	2–3
Cambodia	Cambodia Education Sector Support Project	2–3
Pakistan	Punjab Education Sector Reform Program	3
Turkey	Social Risk Mitigation Project	6
Chile	Chile Solidario	7
Honduras	Programa de Asignación Familiar	9
Ecuador	Bono de Desarrollo Humano	10

Jamaica	Program of Advancement Through Health and Education	10
Philippines	**Pantawid Pamilyang Pilipino Program**	**12***
Colombia	Familias en Acción	17
Nicaragua	Atención a Crisis	18
Mexico	Oportunidades	20
Nicaragua	Red de Protección Social	27

Source: Fiszbein et al (2009), World Bank Group for all countries except the Philippines.
*Authors' computations using the PCED Social Protection Survey

The outcome variables, on which ATTs were computed are defined as follows. Pre-transfer income includes wages and salaries, entrepreneurial income, and income from other sources (for example, remittances from abroad, cash receipts from domestic source, dividends, pensions). Consumption includes spending on food, education, clothing, medical expenses, recreation, durable goods, non-durable goods, transportation, tobacco, alcoholic beverages, personal care, household operations, and other disbursements that include purchase/amortization of real property, payments of cash loan, installments for appliances, and loans granted. Unfortunately, we are unable to isolate loan interest and principal payments which are included in the item "other disbursements." As an indicator of changes in debt stocks, we include outstanding loans –the reported total amount of credit the household owes. Saving was estimated as the difference between income and consumption. Table 2 reports the weighted[2] means of these outcome variables.

Table 2. Weighted Means of the Outcome Variables

	All CCT Households	Poor CCT Households	Poor, Non-CCT Households
Income (exclusive of CCT for CCT households)	20,341 (1,210)	10,730 (394)	9,972 (347)
Wages and salaries	19,224 (1,205)	10,479 (382)	11,885 (283)
Entrepreneurial income	1,546 (264)	725 (125)	781 (112)
Other income	351 (80)	162 (41)	663 (104)
Remittances from abroad	18 (6)	18 (7)	105 (26)
Assistance from domestic sources	52 (16)	22 (8)	42 (18)
Consumption	20,595 (923)	18,289 (1,015)	30,030 (1,752)

[2] Weights are calculated as $basic\ weight \times population\ distribution\ adjustment$, where $basic\ weight =$ inverse probability of being selected into the sample (at the province-level) and $population\ distribution\ adjustment = x$ that satisfies:

$$\frac{No.of\ CCT\ Households_u}{Sample\ size_u} \cdot x = \frac{No.of\ CCT\ Households_{NR}}{Sample\ size_{NR}},$$

for each sub-sample $u \in \{CCT/Non-CCT, Nationally\ Representative\ (NR), High/Low\ Risk, Leyte\}$

Food	13,113 (604)	11,854 (798)	18,832 (1,318)
Non-food			
Education	924 (139)	985 (207)	974 (122)
Health	194 (23)	198 (34)	311 (41)
Others (excl. other disbursements)	6,293 (471)	5,187 (330)	9,289 (593)
Other disbursements	100 (24)	84 (30)	264 (94)
Savings	-254 (1,437)	-7,559 (968)	-20,057 (1840)
Loans	1,181 (146)	455 (95)	2,259 (428)

Note: Standard errors are in parentheses.

Table 3 reports the means of covariates after matching CCT households with their counterpart non-beneficiaries. This is the same set of criteria used in the proxy means test (Fernandez, 2007) to identify potential beneficiaries prior to program implementation. These covariates include family composition, education, socioeconomic variables, housing conditions, access to basic services, appliances/assets and regional location. We augmented this set with province indicators. The *p*-values indicate that differences between the treated and matched observations for almost all covariates are not statistically significant after matching. Assignment of treatment can be considered as random after matching on the propensity scores we generated.

Table 3. Descriptive Statistics: Proxy Means Test Covariates

PMT Covariate	T1 vs. C1			T2 vs. C2		
	Treated	Control	p>|t|	Treated	Control	p>|t|
Family Size	6.321	6.399	0.542	6.468	6.383	0.574
Natural Logarithm of family size	1.790	1.806	0.405	1.818	1.813	0.845
No. of children 0-5 years old	0.774	0.846	0.185	0.840	0.893	0.458
No. of children 6-14 years old	1.946	2.048	0.157	2.030	2.145	0.201
No. of children 15-18 years old	0.638	0.652	0.784	0.680	0.650	0.657
No. of elderly family members	0.195	0.185	0.724	0.221	0.172	0.214
Household Head with zero years of education	0.011	0.016	0.476	0.012	0.011	0.941
Household Head elementary graduate	0.201	0.183	0.455	0.199	0.141	0.047
Household Head high school undergraduate	0.545	0.528	0.581	0.556	0.586	0.430
Household Head high school graduate	0.231	0.255	0.357	0.208	0.245	0.261
Household Head college undergraduate	0.188	0.181	0.762	0.166	0.148	0.518
Household Head college graduate and above	0.030	0.030	0.969	0.024	0.020	0.739
Wife elementary graduate	0.160	0.138	0.305	0.157	0.118	0.149
Wife high school undergraduate	0.536	0.529	0.831	0.550	0.572	0.570
Wife high school graduate	0.262	0.272	0.687	0.218	0.278	0.070
Wife college undergraduate	0.181	0.173	0.724	0.157	0.143	0.613
No. of family members with no education	0.072	0.073	0.926	0.082	0.076	0.836
All family members with High school education	2.145	2.155	0.915	2.127	2.132	0.966
All family members with college education	0.563	0.573	0.862	0.508	0.464	0.533
Agricultural household	0.317	0.290	0.329	0.299	0.237	0.074
Sex of household Head (1 if Male)	0.995	0.994	0.815	0.997	0.992	0.370
Roof made of light materials	0.844	0.847	0.896	0.861	0.889	0.282
Wall made of strong materials	0.152	0.148	0.840	0.130	0.113	0.508
Wall made of light materials	0.848	0.852	0.840	0.870	0.887	0.508
Main source of water supply: Shared, faucet, community water system	0.194	0.196	0.930	0.211	0.212	0.978
Main source of water supply: Own use, tubed/piped well	0.134	0.148	0.523	0.118	0.142	0.352
Main source of water supply: Shared, tubed/piped well	0.176	0.160	0.496	0.181	0.169	0.683
Main source of water supply: Dug well	0.077	0.082	0.774	0.088	0.105	0.453
Main source of water supply: Spring, river, stream, etc.	0.032	0.023	0.352	0.039	0.031	0.545
Availability of electricity	0.858	0.851	0.728	0.846	0.837	0.758
Toilet facility: Closed pit	0.070	0.083	0.411	0.057	0.066	0.659
Toilet facility: Open pit	0.050	0.046	0.723	0.048	0.058	0.581
Toilet facility: None	0.020	0.021	0.906	0.015	0.028	0.247
Television	0.778	0.791	0.590	0.743	0.759	0.630
DVD player	0.493	0.500	0.812	0.453	0.435	0.633
Refrigerator	0.129	0.134	0.794	0.118	0.090	0.241
Washing Machine	0.188	0.221	0.172	0.157	0.191	0.257
Air Conditioner	0.007	0.005	0.572	0.006	0.002	0.432
Computer	0.032	0.034	0.895	0.021	0.020	0.936
Oven	0.013	0.015	0.710	0.006	0.008	0.712
Phone	0.688	0.706	0.526	0.647	0.639	0.835
Car	0.073	0.071	0.881	0.060	0.044	0.358

Note: Availability of domestic help at household is one of the covariates in the Proxy Means Test. It was dropped in the regression because none of the samples reported to have any household help.

V. Results

Table 4 reports the ATTs estimated through Propensity Score Matching for various matched samples: all CCT households vs. matched non-CCT households (T_1 vs. C_1), poor CCT households vs. matched poor non-CCT households (T_2 vs. C_2), and non-poor CCT households vs. matched non-poor non-CCT households (T_2 vs. C_3).

Table 4. Estimated ATTs with kernel matching, bandwidth = 0.03

	T1 vs. C1: All CCT Households vs. Matched Non-CCT Households					T2 vs. C2: Poor CCT Households vs. Matched Poor Non-CCT Households					T3 vs. C3: Non-poor CCT Households vs. Matched Non-poor Non-CCT Households				
	Treated (N=558)	Controls (N=1672)	Difference	S.E.	T-stat	Treated (N=331)	Controls (N=610)	Difference	S.E.	T-stat	Treated (N=208)	Controls (N=1062)	Difference	S.E.	T-stat
Income	18946	21937	-2991 **	1401	-2.14	10100	10368	-268	475	-0.56	31936	36707	-4771 **	2116	-2.26
Wages and salaries	17782	20021	-2239 *	1288	-1.74	9937	10301	-364	431	-0.84	27937	31793	-3856 **	1891	-2.04
Entrepreneurial income	1629	1744	-115	300	-0.38	924	886	39	178	0.22	2790	2610	180	592	0.30
Other income	778	1129	-351	514	-0.68	335	183	153	97	1.57	1478	2538	-1060	1014	-1.05
Transfers received	255	369	-113	176	-0.64	109	95	14	36	0.38	500	724	-224	352	-0.64
Remittances from abroad	134	352	-218	170	-1.28	53	90	-38	33	-1.15	276	691	-416	339	-1.23
Transfers from domestic sources	121	17	105 **	44	2.37	56	4	51 ***	15	3.31	224	33	192 *	101	1.90
Gifts and contributions to others	63	81	-18	14	-1.34	52	73	-20	14	-1.47	82	97	-14	23	-0.61
Net transfers received	193	288	-95	176	-0.54	56	22	34	38	0.90	418	628	-210	352	-0.60
Expenditures	20109	22062	-1954 *	1114	-1.75	17555	20345	-2791 *	1467	-1.90	24744	24963	-219	1664	-0.13
Food	12525	13353	-829	755	-1.10	11076	12513	-1437	1144	-1.26	15073	14653	420	1068	0.39
Food consumed at home	9613	10003	-389	501	-0.78	8619	9149	-530	498	-1.06	11357	11101	256	839	0.31
Food regularly consumed outside	2911	3351	-439	433	-1.02	2457	3364	-907	867	-1.05	3716	3552	164	452	0.36
Education	682	797	-115	112	-1.02	733	754	-21	139	-0.15	624	919	-295 *	167	-1.76
Medical care	213	221	-9	44	-0.20	149	190	-41	47	-0.88	326	273	54	78	0.69
Alcoholic beverages	695	770	-75	94	-0.80	661	719	-58	114	-0.51	763	847	-84	148	-0.57
Tobacco	554	603	-49	72	-0.69	472	598	-126	86	-1.47	706	655	52	120	0.43
Fuel, light and water	1611	1881	-269 *	157	-1.71	1364	1507	-144	164	-0.88	2086	2354	-268	259	-1.04
Transportation and communication	1003	1087	-84	111	-0.76	819	1052	-232 **	114	-2.04	1337	1233	104	188	0.55
Household operations	778	944	-166 **	82	-2.02	643	792	-149 **	76	-1.96	1028	1096	-68	139	-0.49
Personal care and effects	869	960	-91	87	-1.04	691	923	-232 ***	85	-2.73	1197	1064	134	158	0.84
Clothing	305	345	-40	34	-1.18	263	323	-61 *	34	-1.79	387	419	-32	57	-0.56
Recreation	77	88	-11	15	-0.72	66	72	-6	17	-0.34	98	114	-16	24	-0.68
Durable furnishing	114	149	-35	35	-0.99	92	114	-21	26	-0.82	155	206	-50	57	-0.89
Non-durable furnishing	88	95	-7	15	-0.45	77	79	-2	17	-0.09	111	117	-6	22	-0.28
Taxes	65	76	-11	19	-0.60	54	52	3	24	0.10	84	113	-29	28	-1.03
House maintenance and repair	186	259	-73	57	-1.30	122	277	-155 **	72	-2.15	301	305	-4	99	-0.04
Special occasions	203	255	-52	34	-1.54	165	217	-52	40	-1.31	269	344	-75	54	-1.37
Other expenditures	25	44	-19	18	-1.05	20	41	-21	13	-1.60	33	61	-29	32	-0.89
Other disbursements	74	118	-44	36	-1.23	57	93	-36	30	-1.20	108	188	-80	65	-1.23
Savings (Income + CCTransfers - Expenditures)	-817	-126	-691	1525	-0.45	-7111	-9978	2867 *	1536	1.87	7545	11743	-4199 *	2410	-1.74
Outstanding Loans	346	622	-276	174	-1.58	334	439	-106	162	-0.65	373	1009	-637 **	304	-2.09
Pseudo R-squared		Unmatched:	0.279	Matched:	0.021		Unmatched:	0.270	Matched:	0.081		Unmatched:	0.286	Matched:	15.900
Mean bias		Unmatched:	15.100	Matched:	2.500		Unmatched:	12.500	Matched:	5.300		Unmatched:	0.088	Matched:	6.400
LR chi-square		Unmatched:	731.980	Matched:	32.370		Unmatched:	349.420	Matched:	73.460		Unmatched:	331.980	Matched:	49.320
p>chi-square		Unmatched:	0.000	Matched:	1.000		Unmatched:	0.000	Matched:	0.867		Unmatched:	0.000	Matched:	0.999

* Statistically significat at the 10% level; ** Statistically significant at the 5% level; *** Statistically significant at the 1% level

The bottom rows of Table 4 indicate match quality in terms of Pseudo *R*-squared, mean bias and likelihood ratio (LR). The matching algorithm we used results in nearly zero pseudo *R*-squared and low mean bias after matching. The LR chi-square becomes statistically significant after matching. These three statistics together indicate that the treated households are suitably matched with control households through the propensity scores we generated.

T_1 vs. C_1, as implemented, includes both inclusion and exclusion errors. We find reduced total household income among CCT households, particularly, reduced wages and salaries. This could indicate reduced labor supply resulting from compliance with program conditions that require time, for example, participation in Family Development Sessions particularly when individual workers are paid on a piece-rate basis. This could also arise from various responses to a misperception that having continued wage employment disqualifies families from the program: actual reduction of labor supply or misreporting of actual wage income. Despite lower reported incomes for CCT households, none of the reported labor-related indicators were significantly different for CCT and non-CCT households (see Table 5). One possible explanation is the presence of disincentives for truthful revelation of work patterns, especially if there is a reduction in work effort, among program beneficiaries.

We find evidence of crowding in because transfers from other domestic sources increased, suggesting possible program spillovers in the form of improved identification of the poor households for social protection programs as a whole. We also find lower spending on household operations which include laundry soap and detergent, floor wax, insect spray, etc.

In T_2 vs. C_2, there were no significant differences in income across CCT and non-CCT households. Total transfers from all domestic sources including the 4Ps, however, are higher for 4Ps households. Total household expenditures are lower among CCT households, particularly, those that are work-related. These include transportation and communication, personal care and effects, and clothing. Thus, although we do not observe program effects on labor decisions, reduced spending in work-related items could suggest lower work effort but not truthfully reported. We also find lower spending on housing maintenance and repairs, which could be linked to program eligibility. Housing characteristics are among the PMT covariates. Arguably, if CCTs are sufficiently large, there could be disincentives to spend on housing maintenance and repairs to ensure that program eligibility is retained. Overall, given patterns in income and spending, we find lower dissaving among the poor 4P households.

Table 5. Estimated ATTs on labor outcomes and supplemental outcome indicators, kernel matching with bandwidth = 0.03

	T1 vs. C1: All CCT Households vs. Matched Non-CCT Households					T2 vs. C2: Poor CCT Households vs. Matched Poor Non-CCT Households					T3 vs. C3: Non-poor CCT Households vs. Matched Non-poor Non-CCT Households				
	Treated (N=558)	Controls (N=1672)	Difference	S.E.	T-stat	Treated (N=331)	Controls (N=610)	Difference	S.E.	T-stat	Treated (N=208)	Controls (N=1062)	Difference	S.E.	T-stat
Adult labor outcomes															
Whether at least one adult member is working	0.991	0.995	-0.004	0.007	-0.66	0.985	0.996	-0.011	0.011	-1.00	1.00	0.99	0.01 **	0.00	2.11
No. of adults working	1.554	1.586	-0.032	0.054	-0.59	1.372	1.316	0.056	0.057	0.98	1.82	1.94	-0.12	0.09	-1.31
Total wage of all adults working (in PHP)	5479403	12217088	-6737685	10111260	-0.67	9120436	14752055	-5631618	13663367	-0.41	169185	8183801	-8014616	11508817	-0.7
Wage per head of each adult working (in PHP)	2780488	5811085	-3030597	4325454	-0.70	4647280	9560473	-4913193	8097118	-0.61	98932	2222574	-2123642	3182986	-0.67
Whether HH head was working in the past week	0.873	0.888	-0.016	0.023	-0.70	0.831	0.869	-0.038	0.034	-1.11	0.94	0.91	0.03	0.03	0.95
Whether the spouse was working in the past week	0.223	0.237	-0.015	0.030	-0.49	0.132	0.115	0.017	0.029	0.58	0.37	0.40	-0.03	0.05	-0.60
Whether HH head has a job/business	0.385	0.462	-0.077	0.096	-0.81	0.472	0.618	-0.146	0.126	-1.16	0.20	0.00	0.20	0.20	1.00
Whether the spouse has a job/business	0.077	0.054	0.023	0.021	1.10	0.097	0.057	0.040	0.026	1.52	0.04	0.04	0.00	0.03	-0.07
Child labor outcomes															
Whether at least one child member is working	0.013	0.010	0.003	0.007	0.43	0.009	0.006	0.003	0.009	0.33	0.01	0.02	-0.01	0.01	-0.64
No. of children working	0.014	0.010	0.004	0.008	0.56	0.009	0.007	0.002	0.011	0.20	0.02	0.02	0.00	0.01	-0.17
Total wage of all children working (in PHP)	555	266	289	407	0.71	102	142	-41	170	-0.24	462	418	44	520	0.08
Wage per head of each child working (in PHP)	9600	33628	-24028	.	.	9600	35000	-25400	.	.	.	.	.	.	.
Supplemental outcome indicators															
Ownership of chicken or pig	0.996	0.980	0.016 ***	0.006	2.76	0.997	0.989	0.008	0.008	0.990	0.995	0.972	0.023 **	0.010	2.43
Value of output per capita from wholesale and retail (in PHP)	4934	8760	-3826 *	1971	-1.94	2663	4869	-2206	2197	-1.000	7222	7395	-173	2733	-0.06
Engaging in livestock and poultry raising	1.088	1.097	-0.009	0.018	-0.52	1.069	1.037	0.033 *	0.019	1.72	1.115	1.131	-0.016	0.031	-0.51

* Statistically significat at the 10% level; ** Statistically significant at the 5% level; *** Statistically significant at the 1% level

T_3 vs. C_3 shows differences in outcome indicators for the non-poor households included in 4Ps versus their counterparts who were correctly excluded from the program. Our PSM estimates suggest possible adverse responses to CCTs - reduced wage income and reduced education spending. This could indicate strategic behavior on the part of the non- or near-poor who were included in the 4Ps by "mistake." Again, they could be underreporting incomes thinking that such information could lead to their eventual disqualification in the program. Another possibility is that they actually reduce work effort, to prolong their stay in the program. The desire to protect program eligibility could also manifest itself in reduced education spending. Although the survey data do not provide detailed information on education spending, one possible explanation is that CCT households transfer their children from private to public schools.

Overall, total transfers from all domestic sources are larger for the non-poor 4Ps households, which magnifies the implications of the inclusion errors of the 4Ps. These households could be obtaining additional benefits from other social protection programs and transfer mechanisms after having been inadvertently tagged as "poor." There seems to be some gains in terms of consumption smoothing for this sub-group. They have lower outstanding loans and dissaving.

The last three rows of Table 5 show some supplemental outcome indicators to support the apparent trends from Table 4. The observed reduction in income among T_1 versus C_1 could also be due to reduced entrepreneurial income, particularly, income from wholesale and retail trade. This is to be expected given that the 4Ps seems to have increased school enrollment and reduced the number of days spent in child labor (DSWD, 2014). The 2011 Survey of Children shows that next to farms, streets and markets are the most likely workplaces of children in hazardous occupations.

One possible outcome of 4Ps which may not be captured in reported income and expenditures as well as computed saving is the increased investment in livestock (that is, chickens and pigs). We find that CCT households have more livestock compared to their matched controls. Among the poor, the CCT households are more likely to report being engaged in livestock and poultry raising. These patterns in livestock could suggest a smoother consumption. The ability to sustain livestock is correlated with more regular food consumption, for example, as shown in Todd et al. (2009).

Finally, we conducted a sensitivity analysis using Rosenbaum bounds to see whether our findings are robust to possible confoundedness of unobserved factors. For the T_1-C_1 comparison, our findings of reduced income and lower wages still hold even if hidden bias leads to selection bias by 75 per cent. The finding of higher transfers from other domestic sources does not remain if unobserved factors lead to selection bias. Lower total expenditure is a robust finding even if hidden bias leads to selection bias by 45 per cent. Lower spending on household operations remains robust even in the presence of selection bias of up to 90 per cent.

For the T_2- C_2 comparison, higher transfers from domestic sources remains a robust finding even if unobserved factors may lead to selection bias by 90 per cent. Lower total expenditures still holds even if hidden bias leads to selection bias by 45 per cent. The findings of lower work-related expenses are robust even in the presence of possible selection bias: up to 90 per cent for transportation and communication, up to 110 per cent for personal care and effects, and up to 55 per cent for clothing. The findings for strategic behavior on household characteristics also remain even in the presence of possible selection bias: up to 85 per cent for household operations and up to 150 per cent for house maintenance and repair. Lower dissavings among the poor CCT beneficiaries still remain even if hidden bias leads to selection bias by 40 per cent.

For the T_3 - C_3 comparison, our findings of lower income still hold even if actual CCT households are less likely to be selected into the program by 65 per cent. Lower wages and salaries remains a robust finding up to a possible selection bias of 90 per cent. Our finding of lower spending on education still holds even if hidden bias leads to selection bias by 100 per cent. The finding on transfers from other domestic sources is not robust in the presence of unobserved confounding factors that lead to selection bias. The finding of lower dissavings still holds even in the presence of possible selection bias by 30 per cent. Lower outstanding loans is a robust finding even if actual CCT recipients are 2.5 times less likely to be selected into CCT than non-beneficiaries. However,

Results of this sensitivity analysis are summarised in the Appendix (Table A5).

VII. Conclusion

Our analysis uses data from a special, nationally representative survey and exploits the variations arising from program inclusion and exclusion errors. Our estimates suggest profound behavioral effects from the 4Ps.

CCT households - whether poor or non-poor - had increased total transfers from other domestic sources. This indicates crowding in of transfers from other sources by virtue of being CCT beneficiaries. This implies that one spillover of the 4Ps is the improved targeting of the poor for social protection programs in general. However, overall, the non-poor have higher total transfers compared to the poor. Thus, such targeting spillover seems to magnify the inclusion error of the 4Ps.

It appears that as a result of increased total transfers, both the poor and non-poor, have smoother consumption over time, whether measured directly as saving or through alternative indicators such as livestock. The poor appear to have less dissaving, while the non-poor who got included in the program are less indebted.

Although the reported incomes and labor decisions of the poor do not seem to be affected by the program, a number of expenditure patterns could suggest lower work effort. The poor program beneficiaries have reported lower spending on

transportation, personal care and effects, and clothing, all of which are work-related spending.

Our study suggests possible strategic behavior among non-poor households to prolong program eligibility by reporting lower incomes. They also have reduced spending on education. One possible explanation is that children of non-poor households could be transferring from private to public schools, in order to increase compliance to the condition of continued school enrollment.
Among poor households, the observed reduced spending on house maintenance and repairs could be a strategic attempt at keeping program eligibility, given that housing characteristics are PMT covariates.

Further research is needed to better understand the wide range of complex behavioral responses to cash transfers. These could have important implications on the cost-effectiveness of the 4Ps.

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Table A1. Estimated ATT with kernel matching, bandwidth = 0.05

	T1 vs. C1: All CCT Households vs. Matched Non-CCT Households					T2 vs. C2: Poor CCT Households vs. Matched Poor Non-CCT Households					T3 vs. C3: Non-poor CCT Households vs. Matched Non-poor Non-CCT Households				
	Treated (N=580)	Controls (N=1672)	Difference	S.E.	T-stat	Treated (N=351)	Controls (N=610)	Difference	S.E.	T-stat	Treated (N=216)	Controls (N=1062)	Difference	S.E.	T-stat
Income	18826	21688	-2862 **	1407	-2.03	10133	10326	-193	471	-0.41	31946	36447	-4501 **	2057	-2.19
Wages and salaries	17632	19953	-2322 *	1300	-1.79	9966	10271	-306	423	-0.72	27944	31699	-3755 **	1864	-2.01
Entrepreneurial income	1602	1784	-182	302	-0.60	887	915	-28	177	-0.16	2764	2845	-81	579	-0.14
Other income	778	951	-174	495	-0.35	332	175	157	97	1.62	1496	2078	-582	937	-0.62
Transfers received	254	310	-57	169	-0.33	111	81	30	35	0.86	494	613	-119	326	-0.37
Remittances from abroad (temp + permanent)	133	297	-164	164	-1.00	56	76	-20	32	-0.63	265	589	-323	312	-1.04
Transfers from domestic sources	121	14	107 **	43	2.51	55	5	50	15	3.38	228	24	204 **	96	2.12
Gifts and contributions to others	61	82	-21	14	-1.45	51	72	-22	15	-1.47	81	103	-22	23	-0.97
Net transfers received	193	229	-36	169	-0.21	60	9	51	37	1.38	413	510	-97	326	-0.30
Expenditures	19937	21744	-1807	1128	-1.60	17321	20140	-2819 *	1457	-1.93	24318	24977	-659	1660	-0.40
Food	12458	13187	-729	757	-0.96	10970	12363	-1394	1116	-1.25	14860	14732	127	1062	0.12
Food consumed at home	9550	9943	-393	503	-0.78	8548	9119	-571	522	-1.09	11196	11180	16	828	0.02
Food regularly consumed outside the home	2907	3244	-336	427	-0.79	2421	3244	-823	822	-1.00	3664	3553	111	450	0.25
Education	669	765	-96	111	-0.87	710	747	-37	135	-0.27	612	897	-285 *	156	-1.82
Medical care	212	220	-8	54	-0.15	151	186	-35	48	-0.73	316	281	35	98	0.35
Alcoholic beverages	685	781	-96	98	-0.98	648	717	-69	119	-0.58	767	955	-188	147	-1.27
Tobacco	552	581	-28	72	-0.39	467	576	-109	92	-1.19	702	669	33	115	0.29
Fuel, light and water	1592	1858	-267	163	-1.63	1340	1511	-171	171	-1.00	2031	2322	-291	251	-1.16
Transportation and communication	987	1062	-75	124	-0.61	798	1033	-235 **	114	-2.05	1302	1193	109	188	0.58
Household operations	768	919	-151 *	82	-1.84	635	784	-149 *	79	-1.88	1000	1068	-68	138	-0.50
Personal care and effects	855	950	-95	90	-1.06	679	917	-238 ***	89	-2.69	1164	1042	123	155	0.79
Clothing	301	337	-36	34	-1.06	256	329	-73 **	35	-2.06	379	410	-31	57	-0.55
Recreation	76	88	-12	15	-0.78	66	75	-9	17	-0.55	95	115	-19	24	-0.81
Durable furnishing	112	149	-37	35	-1.07	90	110	-20	27	-0.73	150	219	-69	58	-1.20
Non-durable furnishing	86	94	-8	15	-0.53	75	81	-6	18	-0.34	108	120	-12	23	-0.51
Taxes	63	75	-12	18	-0.66	53	53	-1	23	-0.03	82	114	-32	27	-1.18
House maintenance and repair	181	246	-65	55	-1.19	117	280	-163 **	69	-2.35	292	266	26	94	0.28
Special occasions	202	252	-50	35	-1.44	162	214	-52	39	-1.35	269	334	-65	55	-1.18
Other expenditures	24	44	-20	18	-1.12	20	42	-22 *	13	-1.74	32	62	-30	30	-1.00
Other disbursements	74	118	-43	35	-1.24	54	90	-36	29	-1.24	105	177	-72	60	-1.20
Savings (Income + CCTransfers - Expenditures)	-766	-56	-710	1544	-0.46	-6845	-9814	2969 *	1514	1.96	7977	11470	-3493	2391	-1.46
Outstanding Loans	337	586	-248	168	-1.48	329	452	-122	154	-0.79	369	885	-516 *	280	-1.84
Pseudo R-squared		Unmatched:	0.251	Matched:	0.013		Unmatched:	0.25	Matched:	0.05		Unmatched:	0.251	Matched:	0.059
Mean bias		Unmatched:	21.600	Matched:	2.800		Unmatched:	21.600	Matched:	5.600		Unmatched:	21.600	Matched:	6.000
LR chi-square		Unmatched:	665.230	Matched:	21.550		Unmatched:	665.230	Matched:	51.330		Unmatched:	665.230	Matched:	35.250
p>chi-square		Unmatched:	0.000	Matched:	1.000		Unmatched:	0.000	Matched:	0.687		Unmatched:	0.000	Matched:	0.990

* Statistically significat at the 10% level; ** Statistically significant at the 5% level; *** Statistically significant at the 1% level

Table A2. Estimated ATT with radius matching, caliper size = 0.03

	T1 vs. C1: All CCT Households vs. Matched Non-CCT Households					T2 vs. C2: Poor CCT Households vs. Matched Poor Non-CCT Households					T3 vs. C3: Non-poor CCT Households vs. Matched Non-poor Non-CCT Households				
	Treated (N=558)	Controls (N=1672)	Difference	S.E.	T-stat	Treated (N=331)	Controls (N=610)	Difference	S.E.	T-stat	Treated (N=208)	Controls (N=1062)	Difference	S.E.	T-stat
Income	18946	21855	-2909 **	1378	-2.11	10100	10333	-234	468	-0.50	31936	36386	-4449 **	2081	-2.14
Wages and salaries	17782	20133	-2351 *	1263	-1.86	9937	10352	-414	426	-0.97	27937	31747	-3809 **	1863	-2.04
Entrepreneurial income	1629	1749	-121	296	-0.41	924	891	33	175	0.19	2790	2588	201	585	0.34
Other income	778	993	-215	504	-0.43	335	178	157	96	1.64	1478	2227	-749	996	-0.75
Transfers received	255	326	-71	173	-0.41	109	81	28	35	0.78	500	666	-166	347	-0.48
Remittances from abroad	134	309	-175	167	-1.05	53	75	-22	32	-0.70	276	636	-360	333	-1.08
Transfers from domestic sources	121	17	105 **	44	2.39	56	6	50 ***	15	3.26	224	31	194	100	2
Gifts and contributions to others	63	80	-17	14	-1.28	52	68	-16	14	-1.18	82	98	-15	23	-1
Net transfers received	193	246	-53	172	-0.31	56	13	44	37	1.17	418	569	-151	346	0
Expenditures	20109	21964	-1855 *	1096	-1.69	17555	20301	-2746 *	1439	-1.91	24744	24983	-239	1641	-0.15
Food	12525	13288	-763	742	-1.03	11076	12425	-1349	1121	-1.20	15073	14702	372	1054	0.35
Food consumed at home	9613	9969	-355	493	-0.72	8619	9107	-488	490	-1.00	11357	11150	208	828	0.25
Food regularly consumed outside	2911	3319	-408	425	-0.96	2457	3318	-861	848	-1.02	3716	3552	164	446	0.37
Education	682	778	-95	111	-0.86	733	749	-16	137	-0.12	624	932	-308 *	165	-1.87
Medical care	213	220	-8	43	-0.18	149	190	-41	46	-0.89	326	278	49	77	0.63
Alcoholic beverages	695	782	-88	92	-0.95	661	743	-82	112	-0.73	763	862	-99	146	-0.68
Tobacco	554	596	-42	71	-0.60	472	598	-126	85	-1.49	706	653	54	118	0.45
Fuel, light and water	1611	1882	-270 *	155	-1.75	1364	1522	-158	161	-0.98	2086	2338	-252	255	-0.99
Transportation and communication	1003	1087	-84	109	-0.77	819	1059	-240 **	112	-2.14	1337	1216	121	185	0.65
Household operations	778	940	-162 **	81	-2.00	643	801	-158 **	75	-2.12	1028	1090	-62	137	-0.45
Personal care and effects	869	966	-96	86	-1.12	691	935	-244 ***	83	-2.92	1197	1064	133	156	0.85
Clothing	305	338	-33	33	-1.00	263	317	-55	33	-1.64	387	419	-32	57	-0.56
Recreation	77	88	-10	15	-0.70	66	73	-6	16	-0.37	98	110	-12	24	-0.53
Durable furnishing	114	147	-33	35	-0.95	92	110	-17	26	-0.67	155	203	-48	55	-0.86
Non-durable furnishing	88	93	-5	15	-0.34	77	78	-1	17	-0.05	111	114	-3	22	-0.14
Taxes	65	77	-11	18	-0.63	54	54	1	24	0.04	84	112	-28	28	-1.01
House maintenance and repair	186	252	-66	56	-1.18	122	280	-158 **	70	-2.25	301	287	14	98	0.14
Special occasions	203	254	-51	33	-1.53	165	211	-46	39	-1.18	269	344	-74	54	-1.38
Other expenditures	25	43	-18	18	-0.99	20	38	-18	13	-1.33	33	60	-28	32	-0.88
Other disbursements	74	117	-43	35	-1.22	57	94	-37	29	-1.25	108	197	-89	64	-1.40
Savings (Income + CCTransfers - Expenditures)	-817	-108	-708	1500	-0.47	-7111	-9967	2856 *	1506	1.90	7545	11403	-3858	2376	-1.62
Outstanding Loans	346	616	-270	171	-1.58	334	448	-115	159	-0.72	373	1032	-660 **	298	-2.21
Pseudo R-squared		Unmatched:	0.279	Matched:	0.019		Unmatched:	0.270	Matched:	0.076		Unmatched:	0.286	Matched:	0.084
Mean bias		Unmatched:	15.100	Matched:	2.300		Unmatched:	12.500	Matched:	5.100		Unmatched:	15.900	Matched:	6.200
LR chi-square		Unmatched:	731.980	Matched:	29.620		Unmatched:	349.420	Matched:	69.120		Unmatched:	331.980	Matched:	47.360
p>chi-square		Unmatched:	0.000	Matched:	1.000		Unmatched:	0.000	Matched:	0.932		Unmatched:	0.000	Matched:	1.000

* Statistically significat at the 10% level; ** Statistically significant at the 5% level; *** Statistically significant at the 1% level

Table A3. Estimated ATT with radius matching, caliper size = 0.02

	T1 vs. C1: All CCT Households vs. Matched Non-CCT Households					T2 vs. C2: Poor CCT Households vs. Matched Poor Non-CCT Households					T3 vs. C3: Non-poor CCT Households vs. Matched Non-poor Non-CCT Households				
	Treated (N=543)	Controls (N=1672)	Difference	S.E.	T-stat	Treated (N=314)	Controls (N=610)	Difference	S.E.	T-stat	Treated (N=199)	Controls (N=1062)	Difference	S.E.	T-stat
Income	19054	22143	-3089 **	1376	-2.24	10075	10314	-238	484	-0.49	32006	36811	-4805 **	2153	-2.23
Wages and salaries	17934	20190	-2256 *	1275	-1.77	10004	10375	-372	435	-0.86	27931	31774	-3844 **	1932	-1.99
Entrepreneurial income	1642	1751	-109	303	-0.36	911	823	88	178	0.50	2840	2705	135	621	0.22
Other income	766	1160	-394	480	-0.82	343	163	180 *	95	1.89	1516	2563	-1047	1010	-1.04
Transfers received	257	367	-110	147	-0.74	101	80	21	35	0.61	509	711	-202	317	-0.64
Remittances from abroad	138	345	-207	141	-1.47	44	77	-33	32	-1.04	288	663	-375	300	-1.25
Transfers from domestic sources	119	22	97 **	45	2.15	57	3	54 ***	14	3.87	221	48	173	106	2
Gifts and contributions to others	63	83	-20	14	-1.47	53	79	-26 *	14	-1.79	84	97	-13	24	-1
Net transfers received	193	283	-90	148	-0.61	48	1	47	37	1.27	425	614	-189	318	-1
Expenditures	20255	22308	-2052 *	1074	-1.91	17622	20475	-2853 *	1505	-1.90	25213	25551	-337	1673	-0.20
Food	12602	13430	-828	733	-1.13	11071	12522	-1452	1165	-1.25	15382	14943	438	1077	0.41
Food consumed at home	9673	10041	-368	479	-0.77	8676	9148	-472	510	-0.93	11607	11293	314	856	0.37
Food regularly consumed outside	2929	3389	-460	431	-1.07	2395	3375	-980	883	-1.11	3774	3650	124	445	0.28
Education	680	816	-136	111	-1.22	718	769	-51	145	-0.35	645	947	-302 *	178	-1.69
Medical care	217	227	-9	43	-0.22	153	197	-44	48	-0.91	337	278	59	81	0.73
Alcoholic beverages	695	781	-86	92	-0.93	671	714	-43	116	-0.37	768	871	-103	151	-0.68
Tobacco	564	614	-50	71	-0.70	485	619	-134	88	-1.51	718	678	39	122	0.32
Fuel, light and water	1631	1897	-266 *	156	-1.70	1379	1503	-124	168	-0.74	2126	2419	-293	268	-1.09
Transportation and communication	1011	1117	-106	109	-0.97	830	1076	-247 **	118	-2.09	1363	1302	61	192	0.32
Household operations	785	960	-174 **	77	-2.25	657	803	-146 *	77	-1.90	1034	1124	-91	139	-0.65
Personal care and effects	874	972	-98	81	-1.22	692	935	-243 ***	85	-2.86	1211	1100	111	151	0.74
Clothing	307	350	-43	34	-1.28	264	322	-58 *	35	-1.68	391	428	-37	60	-0.62
Recreation	79	90	-11	15	-0.75	67	74	-7	17	-0.43	100	116	-15	24	-0.64
Durable furnishing	117	155	-37	35	-1.08	96	124	-28	26	-1.09	160	215	-55	59	-0.93
Non-durable furnishing	90	99	-10	15	-0.64	79	83	-4	18	-0.23	114	125	-11	23	-0.47
Taxes	67	79	-13	18	-0.70	54	53	1	18	0.05	87	115	-28	29	-0.97
House maintenance and repair	190	270	-80	58	-1.39	127	279	-152 **	75	-2.03	309	307	2	105	0.02
Special occasions	205	259	-55	33	-1.64	167	224	-57 *	30	-1.93	273	340	-66	55	-1.20
Other expenditures	25	47	-22	18	-1.20	21	45	-25 *	14	-1.75	33	65	-32	35	-0.91
Other disbursements	76	127	-51 *	27	-1.85	54	97	-43	30	-1.41	112	185	-74	51	-1.45
Savings (Income + CCTransfers - Expenditures)	-855	-165	-690	1517	-0.45	-7203	-10161	2958 *	1572	1.88	7143	11260	-4117 *	2486	-1.66
Outstanding Loans	354	619	-264	174	-1.52	342	473	-131	169	-0.78	380	991	-611 *	321	-1.90
Pseudo R-squared		Unmatched:	0.279	Matched:	0.020		Unmatched:	0.270	Matched:	0.081		Unmatched:	0.286	Matched:	0.094
Mean bias		Unmatched:	15.100	Matched:	2.600		Unmatched:	12.500	Matched:	5.400		Unmatched:	15.900	Matched:	6.400
LR chi-square		Unmatched:	731.980	Matched:	29.880		Unmatched:	349.420	Matched:	69.950		Unmatched:	331.980	Matched:	50.460
p>chi-square		Unmatched:	0.000	Matched:	1.000		Unmatched:	0.000	Matched:	0.909		Unmatched:	0.000	Matched:	0.999

* Statistically significat at the 10% level; ** Statistically significant at the 5% level; *** Statistically significant at the 1% level

Table A4. Estimated ATT with radius matching, caliper size = 0.01

	T1 vs. C1: All CCT Households vs. Matched Non-CCT Households					T2 vs. C2: Poor CCT Households vs. Matched Poor Non-CCT Households					T3 vs. C3: Non-poor CCT Households vs. Matched Non-poor Non-CCT Households				
	Treated (N=502)	Controls (N=1672)	Difference	S.E.	T-stat	Treated (N=266)	Controls (N=610)	Difference	S.E.	T-stat	Treated (N=168)	Controls (N=1062)	Difference	S.E.	T-stat
Income	18932	22715	-3783 ***	1358	-2.79	10111	10212	-101	524	-0.19	31691	38103	-6413 ***	1993	-3.22
Wages and salaries	17917	20681	-2764 **	1256	-2.2	10097	10515	-417	479	-0.87	27771	32053	-4282	1781	-2.40
Entrepreneurial income	1640	1776	-136	308	-0.44	882	714	168	191	0.88	2852	3051	-199	675	-0.29
Other income	805	1260	-455	462	-0.98	377	95	282 ***	97	2.90	1398	3404	-2006 **	1007	-1.99
Transfers received	266	362	-96	140	-0.68	113	35	78 **	37	2.07	542	911	-370	319	-1.16
Remittances from abroad	140	349	-208	132	-1.58	52	31	20	34	0.60	337	904	-567 *	305	-1.86
Transfers from domestic sources	126	14	112 **	50	2.26	61	4	57 ***	16	3.51	205	8	197	97	2
Gifts and contributions to others	67	87	-20	15	-1.37	59	80	-21	16	-1.32	94	111	-17	25	-1
Net transfers received	199	275	-76	141	-0.54	54	-45	98 **	39	2.49	447	801	-353	320	-1
Expenditures	20817	22896	-2078 *	1151	-1.81	18254	21080	-2826	1741	-1.62	26438	26787	-348	1739	-0.20
Food	12873	13879	-1006	795	-1.27	11386	13243	-1858	1373	-1.35	16010	15742	268	1114	0.24
Food consumed at home	9881	10344	-464	511	-0.91	8911	9336	-425	575	-0.74	12045	11856	189	856	0.22
Food regularly consumed outside	2992	3535	-542	479	-1.13	2475	3907	-1433	1055	-1.36	3965	3886	79	492	0.16
Education	711	853	-142	123	-1.15	756	756	0	157	0.00	638	972	-333 *	188	-1.77
Medical care	230	240	-10	48	-0.21	154	192	-38	55	-0.69	372	347	25	93	0.27
Alcoholic beverages	714	756	-42	94	-0.44	687	626	61	122	0.50	851	768	83	142	0.58
Tobacco	579	599	-19	74	-0.26	506	606	-100	96	-1.05	740	627	113	131	0.86
Fuel, light and water	1692	1982	-289 *	170	-1.71	1440	1514	-74	173	-0.43	2260	2637	-377	278	-1.36
Transportation and communication	1050	1128	-78	115	-0.67	879	1075	-195	128	-1.52	1415	1379	36	205	0.18
Household operations	814	960	-147 *	83	-1.77	704	840	-136 *	82	-1.66	1058	1163	-105	142	-0.74
Personal care and effects	902	997	-96	86	-1.12	729	938	-208 **	89	-2.34	1292	1171	121	166	0.73
Clothing	317	351	-34	36	-0.95	262	308	-46	34	-1.34	416	434	-17	66	-0.26
Recreation	82	93	-11	16	-0.70	69	70	-1	16	-0.07	111	129	-18	26	-0.68
Durable furnishing	125	168	-43	36	-1.19	101	123	-22	29	-0.77	168	223	-55	54	-1.02
Non-durable furnishing	95	102	-8	16	-0.49	85	80	5	19	0.28	127	130	-3	25	-0.12
Taxes	69	80	-11	19	-0.56	51	55	-4	17	-0.26	99	111	-12	27	-0.46
House maintenance and repair	203	269	-66	60	-1.10	138	274	-136 *	71	-1.91	357	370	-12	124	-0.10
Special occasions	211	267	-56	35	-1.60	172	234	-62 *	32	-1.94	300	370	-70	60	-1.17
Other expenditures	27	47	-20	20	-0.98	23	41	-18	16	-1.08	39	67	-28	23	-1.19
Other disbursements	82	127	-45	30	-1.47	51	93	-42	35	-1.19	122	175	-53	57	-0.94
Savings (Income + CCTransfers - Expenditures)	-1538	-181	-1357	1560	-0.87	-7797	-10869	3071 *	1800	1.71	5603	11316	-5714 **	2427	-2.35
Outstanding Loans	346	608	-262	195	-1.34	377	459	-82	172	-0.47	346	1102	-756 *	389	-1.95
Pseudo R-squared		Unmatched:	0.279	Matched:	0.028		Unmatched:	0.270	Matched:	0.097		Unmatched:	0.286	Matched:	0.112
Mean bias		Unmatched:	15.100	Matched:	3.000		Unmatched:	12.500	Matched:	6.400		Unmatched:	15.900	Matched:	6.200
LR chi-square		Unmatched:	731.980	Matched:	38.750		Unmatched:	349.420	Matched:	70.800		Unmatched:	331.980	Matched:	50.250
p>chi-square		Unmatched:	0.000	Matched:	1.000		Unmatched:	0.000	Matched:	0.882		Unmatched:	0.000	Matched:	0.999

* Statistically significat at the 10% level; ** Statistically significant at the 5% level; *** Statistically significant at the 1% level

Table A5. Sensitivity Analysis using Rosenbaum bounds

	T1 vs. C1			T2 vs. C2			T3 vs. C3		
	Gamma	sig+	sig-	Gamma	sig+	sig-	Gamma	sig+	sig-
Income	1.00	0.000	0.000	1.00	0.280	0.280	1.00	0.000	0.000
	1.25	0.000	0.000	1.25	0.009	0.880	1.60	0.000	0.052
	1.50	0.000	0.002	1.50	0.000	0.996	1.65	**0.000**	**0.075**
	1.75	**0.000**	**0.083**	1.75	0.000	1.000	1.70	0.000	0.103
Wages and salaries	1.00	0.000	0.000	1.00	**0.088**	**0.088**	1.00	0.000	0.000
	1.40	0.000	0.000	1.25	0.001	0.618	1.30	0.000	0.000
	1.80	**0.000**	**0.071**	1.50	0.000	0.951	1.60	0.000	0.008
	2.00	0.000	0.311	1.75	0.000	0.997	1.90	**0.000**	**0.077**
Assistance from other domestic sources	1.00	0.830	0.830	1.00	0.000	0.000	1.00	0.370	0.370
	1.25	0.989	0.355	1.30	0.006	0.000	1.25	0.664	0.138
	1.50	1.000	0.073	1.60	0.033	0.000	1.50	0.852	0.043
	1.75	1.000	0.009	1.90	**0.099**	**0.000**	1.75	0.942	0.012
Expenditures	1.00	0.000	0.000	1.00	0.000	0.000	1.00	0.000	0.000
	1.15	0.000	0.000	1.15	0.000	0.001	1.15	0.000	0.002
	1.30	0.000	0.005	1.30	0.000	0.010	1.30	0.000	0.015
	1.45	**0.000**	**0.070**	1.45	**0.000**	**0.068**	1.45	**0.000**	**0.069**
Education	1.00	0.000	0.000	1.00	0.000	0.000	1.00	0.000	0.000
	1.60	0.000	0.000	1.15	0.000	0.001	1.50	0.000	0.001
	2.20	**0.000**	**0.097**	1.30	0.000	0.015	1.75	0.000	0.017
	2.80	0.000	0.813	1.45	**0.000**	**0.087**	2.00	**0.000**	**0.082**
Transportation and communication	1.00	0.000	0.000	1.00	0.000	0.000	1.00	0.898	0.898
	1.30	0.000	0.000	1.30	0.000	0.000	1.25	0.996	0.453
	1.60	**0.000**	**0.068**	1.60	0.000	0.004	1.50	1.000	0.105
	1.90	0.000	0.574	1.90	**0.000**	**0.082**	1.75	1.000	0.013
Personal care	1.00	0.000	0.000	1.00	0.000	0.000	1.00	0.950	0.950
	1.25	0.000	0.000	1.60	0.000	0.000	1.25	0.999	0.601
	1.50	0.000	0.001	2.10	**0.000**	**0.076**	1.50	1.000	0.191
	1.75	**0.000**	**0.067**	2.60	0.000	0.532	1.75	1.000	0.033
Clothing	1.00	0.000	0.000	1.00	0.000	0.000	1.00	0.000	0.000
	1.45	0.000	0.000	1.50	0.000	0.055	1.25	0.000	0.013
	1.85	**0.000**	**0.077**	1.55	**0.000**	**0.088**	1.45	**0.000**	**0.093**
	2.25	0.000	0.670	1.60	0.000	0.133	1.65	0.000	0.293
Household operations	1.00	0.000	0.000	1.00	0.000	0.000	1.00	0.002	0.002
	1.30	0.000	0.000	1.80	0.000	0.058	1.25	**0.000**	**0.073**
	1.60	0.000	0.001	1.85	**0.000**	**0.085**	1.50	0.000	0.368
	1.90	**0.000**	**0.084**	1.90	0.000	0.120	1.75	0.000	0.726
House maintenance and repairs	1	0.000	0.000	1.00	0.000	0.000	1.00	0.000	0.000
	1.7	0.000	0.000	2.00	0.000	0.002	1.25	0.000	0.009
	2.7	**0.000**	**0.082**	2.50	**0.000**	**0.096**	1.45	**0.000**	**0.069**
	3.7	0.000	0.914	3.00	0.000	0.475	1.65	0.000	0.239
Savings	1.00	0.027	0.027	1.00	0.000	0.000	1.00	0.001	0.001
	1.05	**0.008**	**0.077**	1.20	0.006	0.000	1.10	0.000	0.007
	1.10	0.002	0.171	1.40	**0.095**	**0.000**	1.20	0.000	0.029
	1.15	0.000	0.309	1.60	0.386	0.000	1.30	**0.000**	**0.079**
Outstanding loans	1.00	0.000	0.000	1.00	0.000	0.000	1.00	0.000	0.000
	1.75	0.000	0.000	1.35	0.000	0.000	1.50	0.000	0.000
	2.75	**0.000**	**0.075**	1.65	0.000	0.006	2.00	0.000	0.006
	3.75	0.000	0.894	1.95	**0.000**	**0.094**	2.50	**0.000**	**0.094**

Notes:

Gamma = log odds of differential assignment due to unobserved factors

sig+ = upper bound significance level

sig- = lower bound significance level

The critical values corresponding to the lowest value of gamma that yields statistically significant estimates at the 10% level are in bold.