

Evaluating the Impact of *Pantawid Pamilyang Pilipino* Program on Consumption

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Presentation Outline

Outline



- Research Question
- Program Overview
- Impact Evaluation Methodology
- Data
- Empirical Results
- Conclusion and Recommendations

Research question

- Most CCTs aim to increase food and total consumption of beneficiary households.
- This effect however is not a straightforward consequence of program participation due to several factors:
 - ▣ offsetting effects
 - ▣ differential incentives between types of goods
 - ▣ targeted transfers to women

Research question

- Studies on CCT programs found that the program led to consumption of more and better sources of energy and nutrients.
- This study evaluates the marginal contribution of *Pantawid Pamilya* to changes in consumption among households that actually participated in the program (average treatment effect on the treated).

Pantawid Pamilya Overview

- Targeting has two major stages: (1) selection of geographical areas; and (2) household assessment through Proxy Means Test.
- Eligible households are those that qualify through (1) and (2) above and have children 0 and 14 years old or have a pregnant household member.
- Two cash grants: (1) Php300 per month per beneficiary child and (2) Php500 per month per household.

Impact Evaluation Methodology

- Non-random program placement leads to systematic differences between $P=0$ and $P=1$
- Use of observational data collected post-program initiation means there is no “true” baseline data
- Propensity score matching (PSM) mimics an experiment by constructing two statistically similar groups with equal chances of being $P=0$ and $P=1$

Impact Evaluation Methodology

- Two assumptions needed to establish that PSM leads to a valid counterfactual:
 - After conditioning on propensity score $\Pr(\mathbf{X})$, potential outcomes (Y_1, Y_0) are independent of P .
 - For all possible values of $\Pr(\mathbf{X})$, $0 < \Pr(P=1|\mathbf{X}) < 1$
- Two steps in PSM implementation: (1) estimate propensity score; (2) calculate ATT estimates among matched sample of $P=1$ and $P=0$.

Dataset - Annual Poverty Indicators Survey 2011

- APIS monitors non-income indicators that are strong correlates of poverty. APIS 2011 collected information on 42,063 HHs.
- Analysis is limited to the sub-sample of *Pantawid Pamilya* beneficiaries (3,066) and eligible non-beneficiaries (25,206).
- Rich dataset of variables related to participation and outcomes among P=1 and P=0.

Dataset - Annual Poverty Indicators Survey 2011

- Pr(**X**) estimation variables: (1) family demographics; (2) HH head and spouse characteristics; (3) dwelling characteristics; (4) ownership of assets; (5) location; and (6) others
- Outcome variables: (1) per capita monthly expenditures on food and non-food items adjusted to 2009 Metro Manila prices; (2) shares to total food or non-food expenditures using nominal prices.

Empirical results – Pr(X) estimation

Variables	dy/dx	SE	Variables	dy/dx	SE
<u>Demographics</u>			<u>HH assets</u>		
Household size	0.0052	0.0026 **	HH has at least 1 TV	-0.0168	0.0048 ***
No. of HH members 0-2 years old	-0.0113	0.0048 **	HH has at least 1 refrigerator	-0.0436	0.0067 ***
No. of HH members 3-5 years old	0.0125	0.0046 ***	HH has at least 1 washing machine	-0.0337	0.0083 ***
No. of HH members 6-12 years old	0.0130	0.0041 ***	Dummy; =1 if HH has at least 1 oven	-0.0410	0.0110 ***
No. of HH members 13-18 years old	0.0089	0.0043 **	HH has at least 1 landline/cellphone	-0.0066	0.0038 *
<u>HH head and spouse characteristics</u>			<u>Other HH characteristics</u>		
HH head had some elementary	0.0224	0.0061 ***	HH has OFW member	-0.0263	0.0102 **
HH head is elem grad	0.0231	0.0062 ***	HH do not have wage income	0.0109	0.0045 **
HH head has some high school	0.0132	0.0067 **	HH head is self-employed	0.0227	0.0044 ***
Spouse had some elementary	0.0262	0.0064 ***	Rural	0.0320	0.0045 ***
Spouse is elem grad	0.0262	0.0062 ***	HH has agri land for agri purpose	0.0248	0.0039 ***
Spouse has some high school	0.0128	0.0065 **	HH belongs to income deciles 1-4	0.0333	0.0055 ***
<u>Dwelling characteristics</u>			HH is in Set 1 or Set 2 province	0.0518	0.0047 ***
Dwelling roof made of light materials	0.0174	0.0044 ***	HH is feeding program recipient	0.0442	0.0080 ***
Dwelling walls made of light materials	0.0174	0.0043 ***	HH food for work program recipient	0.0314	0.0167 *
Toilet - Pail System	0.0561	0.0190 **			
Own dwelling, community water system	0.0167	0.0098 *			
Public Tap	0.0486	0.0096 ***			
Protected Well	0.0303	0.0092 ***			
Unprotected Well	0.0391	0.0101 ***			
Developed Spring	0.0291	0.0104 ***			
Undeveloped Spring	0.0350	0.0112 ***			
Tenure - Own house, rent lot	0.0735	0.0412 *			

Sample Size – 28,272

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source of basic data: APIS 2011, National Statistics Office

Note: Variables shown are significant in predicting participation to Pantawid Pamilya. There were a total of 77 variables used in propensity score estimation

Empirical results – Pr(X) estimation

Variables	dy/dx	SE
<u>Demographics</u>		
Household size	0.0052	0.0026**
No. of HH members 0-2 years old	-0.0113	0.0048**
No. of HH members 3-5 years old	0.0125	0.0046***
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Empirical results – Pr(X) estimation

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<u>HH head and spouse characteristics</u>		
HH head had some elementary	0.0224	0.0061 ***
HH head is elementary graduate	0.0231	0.0062 ***
HH head has some high school	0.0132	0.0067 **
Spouse had some elementary	0.0262	0.0064 ***
Spouse is elementary graduate	0.0262	0.0062 ***
Spouse has some high school	0.0128	0.0065 **

Sample Size – 28,272

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Source of basic data: APIS 2011, National Statistics Office

Empirical results – Pr(X) estimation

Variables	dy/dx	SE
<u>Dwelling characteristics</u>		
Dwelling roof made of light materials	0.0174	0.0044 ***
Dwelling walls made of light materials	0.0174	0.0043 ***
Toilet - Pail System	0.0561	0.0190 **
Own dwelling, community water system	0.0167	0.0098 *
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Tenure - Own house, rent lot	0.0735	0.0412 *

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Empirical results – Pr(X) estimation

Variables	dy/dx	SE
<u>HH assets</u>		
HH has at least 1 TV	-0.0168	0.0048***
HH has at least 1 refrigerator	-0.0436	0.0067***
HH has at least 1 washing machine	-0.0337	0.0083***
Dummy; =1 if HH has at least 1 oven	-0.0410	0.0110***
HH has at least 1 landline/cellular phone	-0.0066	0.0038*

Sample Size – 28,272

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Empirical results – Pr(X) estimation

Variables	dy/dx	SE
<u>Other HH characteristics</u>		
HH has OFW member	-0.0263	0.0102 **
HH do not have wage income	0.0109	0.0045 **
HH head is self-employed	0.0227	0.0044 ***
Rural	0.0320	0.0045 ***
HH has agri land for agri purpose	0.0248	0.0039 ***
HH belongs to income deciles 1-4	0.0333	0.0055 ***
HH is in Set 1 or Set 2 province	0.0518	0.0047 ***
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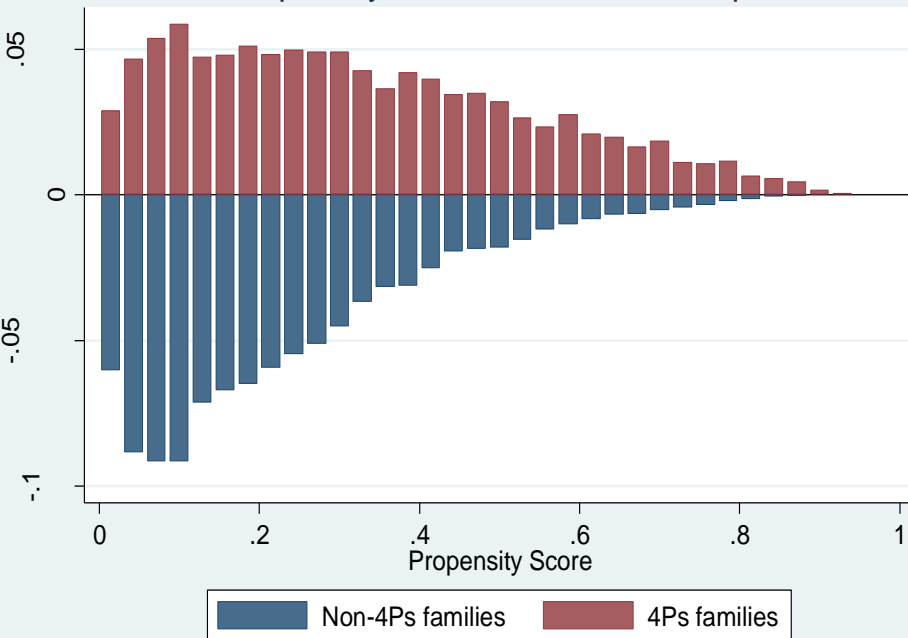
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Source of basic data: APIS 2011, National Statistics Office

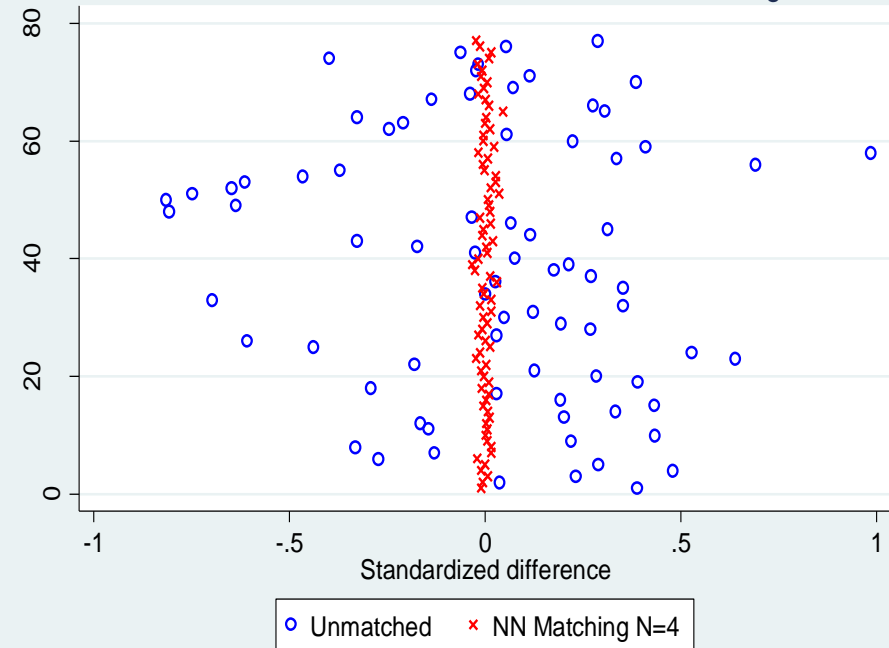
Empirical results – Balance tests

Propensity Score of Matched Sample



Note: Nearest Neighbor matching N=4

Covariate distribution before and after matching



Note: Covariates are just numbered 1-77 for illustration, complete names are in Annex 5

ATT estimates – total sample

Outcome variables	Nearest neighbor		Radius		Kernel	
	N=2, common ties		cal(0.001) common ties		Epanechnikov, bw=0.03	
	ATT	S.E.	ATT	SE	ATT	SE
<i>Per capita per month expenditures</i>						
1 Non-food	-43.33	20.91 **	-24.15	18.98	-48.17	22.83 **
2 Carbohydrate foods	21.78	4.97 ***	22.83	6.71 ***	23.04	6.31 ***
3 Protein foods	-11.92	6.54 *	-11.93	8.65	-14.06	9.02 ***
4 Other food	-10.15	4.61 **	-8.81	4.77 *	-11.78	5.36 **
5 Fuel	-4.85	2.19 **	-5.13	2.35 **	-8.34	2.93 ***
6 Clothing	7.19	1.17 ***	7.14	1.36 ***	6.90	1.49 ***
7 Recreation	-0.97	0.36 ***	-1.17	0.57 **	-1.23	0.60 **
<i>Shares to total food/ non-food</i>						
8 Carbohydrate foods	0.0126	0.0035 ***	0.0133	0.0052 **	0.0126	0.0046 ***
9 Protein foods	-0.0074	0.0029 **	-0.0085	0.0046 *	-0.0070	0.0041 *
10 Other food	-0.0061	0.0023 **	-0.0054	0.0017 ***	-0.0052	0.0028 *
11 Education	0.0111	0.0024 ***	0.0112	0.0032 ***	0.0108	0.0033 ***
12 Clothing	0.0136	0.0013 ***	0.0130	0.0015 ***	0.0134	0.0017 ***
13 Recreation	-0.0008	0.0004 **	-0.0009	0.0005 *	-0.0008	0.0004 *
14 Non-durable furnishing	0.0013	0.0004 ***	0.0011	0.0006 *	0.0011	0.0006 *
Sample Size (P=1 P=0)	3049	3742	2975	25197	3049	25206

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source of basic data: APIS 2011, National Statistics Office

Note: Variables shown are significant in at least two matching techniques used.

ATT estimates – Total sample

- HHs have increased spending on goods conditioned-on by the program, have not increased total food consumption, and have decreased spending on basic non-food items such as fuel.
- Results show cash grants may not be enough to cover full program participation costs and households shoulder indirect costs.

ATT estimates – Bottom 30%

Outcome variables	Nearest neighbor		Radius		Kernel	
	N=2, common ties		cal(0.001) common ties		Epanechnikov, bw=0.03	
	ATT	S.E.	ATT	SE	ATT	SE
<i>Per capita per month expenditures</i>						
1 Total expenditure	42.33	15.67***	38.11	14.41***	36.25	14.16***
2 Savings	22.66	7.65***	25.16	7.16***	27.62	6.97***
3 Food	23.29	10.00***	24.98	8.75***	23.93	8.56***
4 Carbohydrate foods	25.72	5.09***	25.06	4.47***	25.70	4.36***
5 Clothing	8.06	0.88***	7.63	0.84***	7.67	0.82***
6 Recreation			-0.42	0.22*	-0.46	0.22**
<i>Shares to total food/ non-food</i>						
7 Carbohydrate foods	0.0126	0.0041***	0.0104	0.0036***	0.0110	0.0035**
8 Protein foods	-0.0077	0.0033**	-0.0066	0.0030**	-0.0055	0.0029*
9 Education	0.0107	0.0025***	0.0101	0.0022***	0.0097	0.0022***
10 Fuel	-0.0094	0.0031***	-0.0079	0.0027***	-0.0075	0.0026***
11 Clothing	0.0148	0.0015***	0.0146	0.0013***	0.0149	0.0013***
12 Recreation	-0.0007	0.0004*	-0.0005	0.0003*	-0.0006	0.0003**
Sample Size (P=1 P=0)	2390	2772	2313	8835	2409	9186

*Significant at 10%, **Significant at 5%, ***Significant at 1%

Source of basic data: APIS 2011, National Statistics Office

Note: Variables shown are significant in at least two matching techniques used.

ATT estimates – Bottom 30%

- Among poorest households, *Pantawid Pamilya* led to increased per capita monthly total consumption, food expenditures and savings. Expenditure shares of education and clothing increased, while that of fuel and recreation declined.

Conclusion

- *Pantawid Pamilya* is effective in increasing consumption among poorest households.
- Results among total sample indicate that program's targeting issues are substantial in driving differential impact between total and bottom 30% subsample.
- In addition to influencing program impact, leakage problems entail huge inefficiency costs.



Thank you!

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