Evaluating the Impact of *Pantawid Pamilya* on Consumption

Impact Evaluation Matters Conference
ADB, 3ie, and PIDS
5 September, Manila, Philippines
Outline

1. Research motivation
2. Program overview
3. Methodology
4. Data
5. Results
6. Conclusion
Most CCTs aim to improve consumption

- Studies found that CCTs led to consumption of more and better sources of energy and nutrients.
  - 3.3% more calories in Mexico (Hoddinott and Skoufias, 2004)
  - 15% increase in total monthly consumption in Colombia (Attanazoio and Mesnard, 2005)
  - 9 to 15% increase in per capita consumption in Paraguay (Soares et al, 2008).
CCTs can have mixed effects on consumption

1. Research motivation

- offsetting effects
- differential incentives between types of goods
- targeted transfers to women

Total HH Income

- HH-generated
  - Labor
  - Non-labor

- Transfers
  - Private
  - Public
Pantawid is similar to most CCTs elsewhere

- Targeting involves two major stages
- Eligible households: Poor and have children 0-14 years old or have a pregnant household member
- Education and health cash grants
- School participation, access to health services, monthly instructional meetings
Various approaches to generate counterfactual

- Non-random program placement leads to systematic differences between $P=0$ and $P=1$
- Propensity score matching (PSM) is one approach particularly suitable to CCT evaluation
Key PSM assumptions and steps

- Assumptions:
  1. After conditioning on propensity score $Pr(X)$, potential outcomes ($Y_1, Y_0$) are independent of $P$.
  2. For all possible values of $Pr(X)$, $0 < Pr(P=1|X) < 1$

- 3 main steps in PSM implementation
Study uses the APIS 2011

- Strong correlates of poverty
- Rich set of variables for $Pr(X)$ estimation
- 42,063 HHs in APIS 2011
- Sub-sample of *Pantawid Pamilya* beneficiaries (3,066) and eligible non-beneficiaries (25,206)
APIS has covariates and outcomes of interest

- \(Pr(X)\) variables: (1) demographics; (2) HH head and spouse characteristics; (3) dwelling; (4) assets; (5) location; and (6) other correlates of income

- Outcome variables:
  - (1) per capita monthly expenditures on food and non-food items
  - (2) shares to total food or non-food expenditures
Family composition strongly influence $\Pr(P=1|x)$

### Propensity score estimation

<table>
<thead>
<tr>
<th>Variables</th>
<th>$dy/dx$</th>
<th>SE</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household size</td>
<td>0.0014</td>
<td>0.0016</td>
<td></td>
</tr>
<tr>
<td>No. of HH members 0-2 y/o</td>
<td>-0.0050</td>
<td>0.0035</td>
<td></td>
</tr>
<tr>
<td>No. of HH members 3-5 y/o</td>
<td>0.0198</td>
<td>0.0031</td>
<td>***</td>
</tr>
<tr>
<td>No. of HH members 6-12 y/o</td>
<td>0.0199</td>
<td>0.0021</td>
<td>***</td>
</tr>
<tr>
<td>No. of HH members 13-18 y/o</td>
<td>0.0150</td>
<td>0.0023</td>
<td>***</td>
</tr>
</tbody>
</table>

$N=28,272$

*Significant at 10%, **Significant at 5%, ***Significant at 1%  
Source of basic data: APIS 2011, National Statistics Office
Lower educational attainment increase $\Pr(P=1|x)$

### Propensity score estimation

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<thead>
<tr>
<th>Variables</th>
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</thead>
<tbody>
<tr>
<td>HH head and spouse characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HH head had some elementary</td>
<td>0.0223</td>
<td>0.0061 ***</td>
</tr>
<tr>
<td>HH head is elementary graduate</td>
<td>0.0232</td>
<td>0.0062 ***</td>
</tr>
<tr>
<td>HH head has some high school</td>
<td>0.0145</td>
<td>0.0067 **</td>
</tr>
<tr>
<td>Spouse had some elementary</td>
<td>0.0246</td>
<td>0.0064 ***</td>
</tr>
<tr>
<td>Spouse is elementary graduate</td>
<td>0.0254</td>
<td>0.0063 ***</td>
</tr>
<tr>
<td>Spouse has some high school</td>
<td>0.0127</td>
<td>0.0065 *</td>
</tr>
</tbody>
</table>

N= 28,272

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Source of basic data: APIS 2011, National Statistics Office
...and so does low access to facilities and utilities

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<tr>
<th>Variables</th>
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<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dwelling roof made of light materials</td>
<td>0.0170</td>
<td>0.0044***</td>
</tr>
<tr>
<td>Dwelling walls made of light materials</td>
<td>0.0185</td>
<td>0.0043***</td>
</tr>
<tr>
<td>Floor area of the house (square meters)</td>
<td>-0.0001</td>
<td>0.0001*</td>
</tr>
<tr>
<td>Toilet - Pail System</td>
<td>0.0558</td>
<td>0.0191***</td>
</tr>
<tr>
<td>Public Tap</td>
<td>0.0201</td>
<td>0.0071***</td>
</tr>
<tr>
<td>Own dwelling, community water system</td>
<td>-0.0138</td>
<td>0.0076*</td>
</tr>
<tr>
<td>Yard/plot</td>
<td>-0.0202</td>
<td>0.0086**</td>
</tr>
</tbody>
</table>

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Source of basic data: APIS 2011, National Statistics Office
Asset ownership lowers \( \text{Pr}(P=1|x) \)

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<thead>
<tr>
<th>Variables</th>
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</thead>
<tbody>
<tr>
<td>HH assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HH has at least 1 TV</td>
<td>-0.0176</td>
<td>0.0048***</td>
</tr>
<tr>
<td>HH has at least 1 refrigerator</td>
<td>-0.0445</td>
<td>0.0068***</td>
</tr>
<tr>
<td>HH has at least 1 washing machine</td>
<td>-0.0337</td>
<td>0.0083***</td>
</tr>
<tr>
<td>=1 if HH has at least 1 oven</td>
<td>-0.0416</td>
<td>0.0110***</td>
</tr>
</tbody>
</table>

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Source of basic data: APIS 2011, National Statistics Office
Other income correlates strongly predict $\Pr(P=1|x)$

### Propensity score estimation

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</tr>
</thead>
<tbody>
<tr>
<td>HH has OFW member</td>
<td>-0.0270</td>
<td>0.0101**</td>
</tr>
<tr>
<td>Rural</td>
<td>0.0323</td>
<td>0.0045***</td>
</tr>
<tr>
<td>HH has agri land for agri purpose</td>
<td>0.0240</td>
<td>0.0039***</td>
</tr>
<tr>
<td>HH belongs to income deciles 1-4</td>
<td>0.0336</td>
<td>0.0055***</td>
</tr>
<tr>
<td>HH is in Set 1 or Set 2 province</td>
<td>0.0513</td>
<td>0.0047***</td>
</tr>
</tbody>
</table>

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Source of basic data: APIS 2011, National Statistics Office
Pr(x) of $P=1$ and $P=0$ roughly mirror each other
Covariate balance achieved post-matching

Note: Covariates are just numbered 1-77 for illustration, complete names are in Annex 5
Increased spending on program-related goods

- 0.3-0.4 percentage points in education share
- Php8 to Php9 in per capita clothing (33 to 35% of $Y_0$)
- Php25 to Php29 in rice and corn spending (5 to 6% of $Y_0$)
- No statistically significant difference in total consumption.

Note: $Y_0 = E[Y_0|P=1, \Pr(x)]$
5. Results

Stronger positive impact among bottom 20%

- Php43 to Php76 $\uparrow$ in per capita expenditures (3 to 6% of $Y_0$)
- Php28 to Php49 $\uparrow$ in per capita food (3 to 6% of $Y_0$)
- Php7 to Php8 $\uparrow$ in per capita clothing (39 to 46% of $Y_0$)
- $\downarrow$ in negative savings by 1.6 percentage points

Note: $Y_0 = E[Y_0|P=1, Pr(x)]$
What could be happening?
Concluding remarks

- HH reallocation indicate program buy-in
- Targeting issues may be driving differential impact
- Improve program implementation aspects to help households make better consumption decisions
Further research

- Understand dynamics of consumption response over time through better and more data
- Study other program aspects that influence consumption decisions
Thank you!

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