Labour Market Effects of Social Programmes: Evidence from Ethiopia’s Productive Safety Net

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The paper in one slide...

Key Contribution

- Estimate general equilibrium effects on rural labour markets of a safety net programme in the context of Sub-Saharan Africa, using a diff-in-diff. Focus on Ethiopia’s Productive Safety Net Programme (PSNP).

Result

- No impact detected on extensive and intensive margins of the labour supply or wages in rural districts.
- I find evidence of reallocation of workforce to non-agricultural self-employment (5% point increase) in targeted districts.

Still work in progress...

- Plan to add more empirical specifications
- Analyse rural-urban interactions more carefully
Productive Safety Net Programme (PSNP) in Ethiopia

- **Largest Safety Net Programme in Sub-Saharan Africa** (outside South Africa) - current phase started with 8.3m beneficiaries, $3.6 billion budget for 2015-2019.

- Programme began in 2005, currently in its fourth phase. Managed by the Government of Ethiopia - co-funded by WB, WFP, USAID, DfID, and so on...

- Offers two transfers:
  - **Cash and/or Food for Public Works**: 5 days of employment per month for 6 months during Jan-June (low agricultural season) in rural districts (about 84% of the transfers).
  - **Direct support** to labour-poor groups (elderly, disabled, pregnant and lactating mothers) - recent goal is to cover up to 12 months. Plus other interventions, like CBHI (cf. previous presentation).

- Given its scale and policy interest, it is worth investigating whether the effects of the programme move beyond direct beneficiaries → what are the (labour market) effects at the district level?
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Productive Safety Net Programme

Targeting Rule:

- **Geographic targeting**: Districts were chosen within 6 (8) out of 10 regions. Original rule: target districts which *received relief assistance in the previous 3 years consecutively prior to the programme* (prior to 2005).

- **Administrative targeting**: Households within target districts are chosen through a multi-level, bottom-up selection criteria which identifies the more food-insecure households in selected villages.
Productive Safety Net Programme

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Geographical Targeting - Treatment variable
Years of Assistance - Control variable

Legend

Years of Assistance (1995-2004)

- No Assistance
- 1 - 2
- 3 - 4
- 5 - 6
- 7 - 8
- 9 - 10

PSNP Woredas

Regions

Woredas

Lake Tana
Data

Main sources:

- Geographical targeting of the PSNP.
- Village-level census data (2007).
- Rainfall (GPCC) and temperature data (UoDelaware) (1979-2014).
- District-level historical frequency of aid receipts, which I collected in person in Addis Ababa from the Government of the Federal Democratic Republic of Ethiopia in January 2016

Data reductions:

- Only households in rural districts included, urban areas dropped. Focus on working-age individuals (17-65 years) that could be eligible for public works.
- Main balanced panel of 453 district for the 2005 and 2013 rounds.
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Labour Force Survey Sampled Districts

Legend
District sampled
- Orange: In both LFS rounds
- Gray: In either 2005 or 2013 round
- White: Never sampled

- Regions
- Woredas
- Lake Tana

Background
Data
Empirical Strategy
Results
Future Work
Empirical Strategy

A difference-in-difference estimator

\[ Y_{idt} = \beta \times (1_{(PSNP=1)} \times 1_{(t=2013)}) + (\mathbf{C}_d \times 1_{(t=2013)})' \delta + \mathbf{X}'_{dt} \theta + \eta_d + \gamma \times 1_{(t=2013)} + \epsilon_{1,idt} \]

where:

- \( Y_{idt} \) is the outcome of interest for individual \( i \) in district \( d \) in year \( t \),
- \( 1_{(PSNP)} \) is a dummy equal to one if the district is targeted by the PSNP,
- \( \mathbf{C}_d \) and \( \mathbf{X}_{dt} \) are vectors of time-invariant and time-varying district controls, respectively;
- \( 1_{(t=2013)} \) is a dummy equal to one if the year is 2013, which captures any aggregate level covariate affecting all districts in this year, whereas
- \( \eta_d \) is a district-specific fixed effect that is meant to capture time-invariant unobserved characteristics of districts (which absorbs \( 1_{(PSNP)} \)).

Some data/econometric issues:

1. Matching districts across waves, when districts split
2. Clustering at the district level
Empirical Strategy

A difference-in-difference estimator

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1. Matching districts across waves, when districts split
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## Outcomes at baseline

<table>
<thead>
<tr>
<th></th>
<th>PSNP (1)</th>
<th>Control (2)</th>
<th>p-value (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Outcome Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed (%)</td>
<td>81.8</td>
<td>83.1</td>
<td>0.731</td>
</tr>
<tr>
<td>Self-employed in ag. (%)</td>
<td>81.8</td>
<td>86.4</td>
<td>0.185</td>
</tr>
<tr>
<td>Self-employed not in ag. (%)</td>
<td>13.1</td>
<td>10.2</td>
<td>0.338</td>
</tr>
<tr>
<td>Public sector labourers (%)</td>
<td>1.0</td>
<td>0.1</td>
<td>0.175</td>
</tr>
<tr>
<td>Private sector labourers (%)</td>
<td>0.9</td>
<td>1.2</td>
<td>0.766</td>
</tr>
<tr>
<td>Unemployed (%)</td>
<td>1.6</td>
<td>1.8</td>
<td>0.852</td>
</tr>
<tr>
<td>Inactive (%)</td>
<td>16.6</td>
<td>15.1</td>
<td>0.671</td>
</tr>
<tr>
<td><strong>Additional Outcome Variables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total hours worked in main occupation in the last 7 days</td>
<td>27.4</td>
<td>26.6</td>
<td>0.619</td>
</tr>
<tr>
<td>Underemployed (%)</td>
<td>30.0</td>
<td>28.2</td>
<td>0.676</td>
</tr>
<tr>
<td>Has more than one productive activity (%)</td>
<td>22.3</td>
<td>18.9</td>
<td>0.386</td>
</tr>
<tr>
<td>Total hours worked in the last 7 days</td>
<td>30.1</td>
<td>28.5</td>
<td>0.342</td>
</tr>
<tr>
<td>Private sector labourers' monthly real wage</td>
<td>350.0</td>
<td>347.4</td>
<td>0.950</td>
</tr>
<tr>
<td>In-migrants (%)</td>
<td>5.6</td>
<td>7.6</td>
<td>0.403</td>
</tr>
<tr>
<td>Household size</td>
<td>5</td>
<td>5</td>
<td>0.700</td>
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</table>

**Notes:** This table presents means of the outcome variables for different samples. All samples are restricted to persons aged 17 to 65. Column 1 only includes districts that were targeted by the PSNP. Column 2 only includes districts that were not targeted by the PSNP (which form the control group). Column 3 presents the p-values of the student's t-test of equality of means in columns 1 and 2. Standard errors for the student's t-test are computed assuming correlation of individual observations within each district.
Main results

<table>
<thead>
<tr>
<th>Dependant variable:</th>
<th>Employed</th>
<th>Unemployed</th>
<th>Inactive</th>
<th>Self-employed in agriculture</th>
<th>Self-employed out of agriculture</th>
<th>Private Labourer</th>
<th>Public Labourer</th>
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<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
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<td></td>
<td>-0.575</td>
<td>0.978</td>
<td>-0.403</td>
<td>-6.359**</td>
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<td>Mean Dep. Var.</td>
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<td>84.25</td>
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<td>1.33</td>
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<td>Observations</td>
<td>105,323</td>
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Notes: Each cell reports an estimate of beta for different dependent variables; standard errors in parenthesis are clustered at the district level. Each column has a different dependent variable.

In Panel A, each model includes district fixed effects, and district controls. In Panel B, each model includes district fixed effects, district controls and individual controls. The sample consists of individuals aged 17-65, pooling data from the 2005 and 2013 LFS rounds. Columns (4)-(7) restrict the sample only to those that are currently employed. Individual observations are weighted by sampling weights that are proportional to district population. All models are estimated using ordinary least squares. The means of district-level and individual-level controls are shown in Table 3.1.

* denotes significance at the 10%, ** at the 5% and, *** at the 1% level.

Robustness:

- Adding individual controls
- Placebo test using 1999 as baseline and 2005 as endline
- No effect on in-migration, household size, or adding population density as a "bad control" which might be relevant
- Controlling for pre-PSNP shocks
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Next steps

• Adding theory, given that previous theoretical models assumed perfectly elastic labour supply, and public works wages above the market wage.

• Using a combination of rainfall and years of assistance as an IV for treatment status.

• Following Imbert and Papp (2017): Adding urban areas to the analysis. Check if in-migration in urban areas is affected by the PSNP. If so, do urban wages change too? Alternatively, using urban areas within rural districts that receive the PSNP as a treatment group.
Thank you very much!