Labour Market Effects of Ethiopia's Social Safety Net

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The paper in one slide...

Key Contribution

- Estimate the effects on rural labour markets of a safety net programme in Ethiopia, using a diff-in-diff and accounting for the targeting criteria.

Result

- I find no impact on overall employment rate, time spent working, or wages in rural districts.
- I find evidence of reallocation of workforce to non-agricultural self-employment (5% point increase) in targeted districts.
- Suggestive evidence that this reallocation is happening in communities that are not directly targeted by the programme, but within the same district where the programme operates.

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How does a large safety net programme affect non-beneficiaries?

Market effects of social protection programmes

Transfer programmes go beyond direct beneficiaries and spill into the labour market. (Angelucci and De Giorgi, 2009; Imbert and Papp, 2015, 2018; Franklin et al. 2021; Niehaus and Muralindharan, 2021; Gerard et al. 2022; Egger et al., 2022)

Previous evaluations of the rural PSNP

Used non-experimental and survey data from households in a sub-sample of targeted districts (not everyone within woreda is targeted) (Berhane et al., 2011, 2014; Gilligan et al., 2009, 2011; Hoddinott et al., 2011, 2012)

A few recent exceptions that go beyond the direct beneficiaries (Filipski et al., 2016; Gazeaud and Stéphane, 2022)

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Productive Safety Net Programme (PSNP) in Ethiopia

One of the **largest Safety Net Programme in Africa** - previous phase started with 7.9m beneficiaries, $ 3.6 billion budget for 2015-2019. My **analysis focuses between 2005-2013**.

Offers two transfers:

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

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Two levels of targeting

Geographic targeting: Woredas 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.

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Methodology

1. Using the Labour Force Surveys (and other data sources), I compare targeted districts to untargeted districts, before (2005) and after (2013) the large-scale implementation of the PSNP.

   I control for the targeting criteria at the district level.

   I check for robustness across different specification and running a placebo experiment.

2. Using the Ethiopian Socio-Economic Surveys (2011,2013,2015), I check for differences *within* the targeted districts.

   I compare individuals in targeted communities within a targeted district with those that are in the same district, but where the community did not receive the programme.

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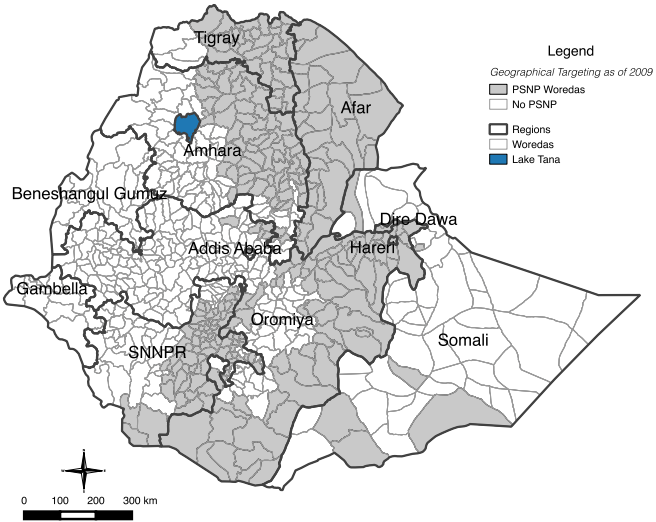
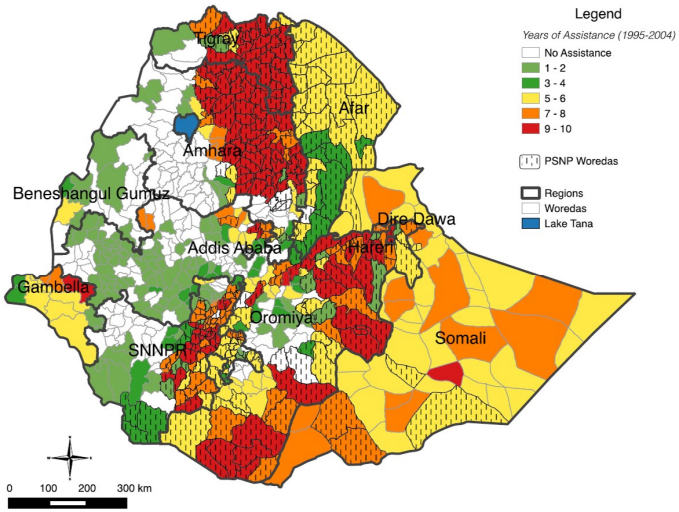
Geographical Targeting - Treatment variable



Years of Assistance - Control variable



Relatively balanced outcomes in 2005

	PSNP (1)	Control (2)	p-value (3)
Main Outcome Variables			
Employed (%)	81.8	83.1	0.731
Self-employed in ag. (%)	81.8	86.4	0.185
Self-employed not in ag. (%)	13.1	10.2	0.338
Public sector labourers (%)	1.0	0.1	0.175
Private sector labourers (%)	0.9	1.2	0.766
Unemployed (%)	1.6	1.8	0.852
Inactive (%)	16.6	15.1	0.671
Additional Outcome Variables			
Total hours worked in main occupation in the last 7 days	27.4	26.6	0.619
Underemployed (%)	30.0	28.2	0.676
Has more than one productive activity (%)	22.3	18.9	0.386
Total hours worked in the last 7 days	30.1	28.5	0.342
Private sector labourers' monthly real wage	350.0	347.4	0.950
In-migrants (%)	5.6	7.6	0.403
Household size	5	5	0.700
District observations	215	238	
Individual observations	31574	26805	

Notes: This table presents means of the outcome variables for different samples. All samples are restricted to persons aged 17 to 65.

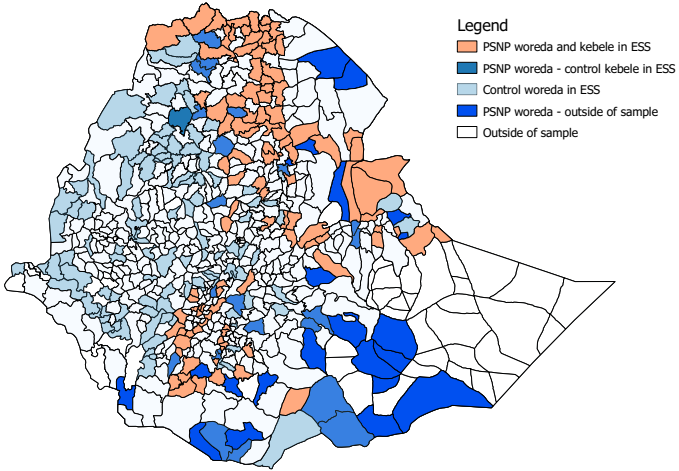
Results

Targeted districts have a higher share of self-employed individuals outside of agriculture

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependant variable:	Employed	Unemployed	Inactive	Self-employed in agriculture	Self-employed out of agriculture	Private Labourer	Public Labourer
1 if PSNP-woreda & after 2013	-0.16	0.936	-0.776	-5.826**	5.286**	-0.008	0.310*
	(2.277)	(0.655)	(2.066)	(2.427)	(2.122)	(0.434)	(0.168)
Mean Dep. Var. (out of 100)	83.18	1.7	15.12	84.25	11.54	1.33	0.49
Observations	105,323	105,323	105,323	86,779	86,779	86,779	86,779
District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Each cell reports an estimate of β 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. * denotes significance at the 10%, ** at the 5% and, *** at the 1% level.

Descriptive comparisons within district (*woreda*)



Sectoral shifts happens more in untargeted communities within targeted districts

	Hours worked as self-employed farmer	Hours worked as non-farming self-employed	Hours worked as temporary worker	Hours worked as employee
Panel A: Differences across woredas				
1 if PSNP-*woreda*	-12.449	17.432	1.651	23.816
	(71.997)	(33.394)	(5.529)	(22.837)
Panel B: Difference across kebeles and woredas				
1 if PSNP-*woreda*	-56.720	22.756	-1.458	28.546
	(72.313)	(34.497)	(5.916)	(29.226)
1 if PSNP-*kebele*	72.211**	-11.657	5.474	-7.646
	(36.584)	(17.720)	(4.264)	(12.755)
1 if household participated in PSNP	-87.386**	5.705	-9.104*	-8.154
	(40.325)	(14.009)	(5.526)	(7.500)
p-value : *kebele* vs. *woreda*	.138	.423	.404	.382
Unit of obs.	Individual	Individual	Individual	Individual
# Clusters	228	228	228	228
# Obs.	37736	37736	37736	37736
Dep. Var. Mean	455.18	120.42	23.64	34.11
Dep. Var. St. Dev.	675.22	428.2	180.42	262.63

Summary of results

No large or statistically significant differences in the extensive margin of labour supply between targeted and untargeted districts.

Small differences in the share of workers self-employed in non-agricultural activities, who move away from self-employment in the agricultural sector.

Little evidence of changes in wages, may be due to thinness of rural labour markets in Ethiopia.

Thank you! Reach me at: gschinaia.github.io
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Appendix

Empirical Strategy

Difference-in-differences model:

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

where:

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

Descriptive specification using only post-2005 data

$$Y_{irwkt} = \beta \times \mathbb{1}_{\{PSNP=1\},w} + \mathbf{X}'_w\theta + \eta_r + \gamma_t + \epsilon_{1,irwkt} \quad (1)$$

where:

Y_{irwkt} is the outcome of interest for individual ***i*** in region ***r***, *woreda* ***w***, *kebele* ***k***, wave ***t***.

$\mathbb{1}_{(PSNP),w}$ is an indicator equal to one if the *woreda* is targeted by the PSNP,

$\mathbf{X}_w$ is a vector of time-invariant woreda controls;

η_r is a region-specific fixed effect and γ_t is a round-specific fixed effect.

Clustering errors at the *woreda woreda* level

$$Y_{irwkt} = \beta_1 \times \mathbb{1}_{\{PSNP=1\},w} + \beta_2 \times \mathbb{1}_{\{PSNP=1\},k} + \beta_3 \times \mathbb{1}_{\{PSNP=1\},i} + \mathbf{X}'_w\theta + \eta_r + \gamma_t + \epsilon_{2,irwkt} \quad (2)$$

where:

β_1 is the difference in **in untargeted *kebeles* targeted *woredas***.

β_2 - β_1 is the difference in **targeted kebeles** relative to untargeted *kebeles*.

β_3 is the direct difference for programme beneficiaries relative to those in **untargeted woredas**.

Data

Main sources:

- Repeated cross-sections of the Ethiopian National Labour Force Survey (1999/2005/2013).
- Geographical targeting of the PSNP as of 2009.
- Kebele-level census data (2007).
- Rainfall (GPCC) and temperature data (UoDelaware) (1979-2014).
- Woreda-level historical frequency of aid receipts
- Panel of Ethiopian Socio-economic Surveys (2011/2014/2016)

Data reductions:

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

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No effects on wages

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependant variable:	(log) Real monthly wage	Household Size	In-migrant (last 5 years)	In-migrant (last 10 years)	Underemployment	Has more than one activity	Hours worked in main activity	Hours worked in all activities
	-0.289	0.571	-19.526	-3.294	-14.809	-19.797	-1.173	-4.148
	(0.416)	(0.744)	(12.030)	(15.879)	(18.944)	(17.516)	(7.244)	(6.453)
Mean Dep. Var.	5.447	5.390	19.29	25.04	41.40	29.10	39.79	42.97
Observations	932	932	932	932	932	932	932	932
District Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Each cell reports an estimate of β; standard errors in parenthesis are clustered at the district level. Each column reports an estimate for a different dependent variable. (log) Real monthly wage is computed is deflated to 2011 real prices using CSA regional deflators. Household size indicates the number of individuals residing in an household. In-migrant is an indicator variable equal to one if the individual has migrated into the district in the last 5 years (Column 3), or the last 10 years (Column 4). Columns The dependent variable in column (5) is an indicator variable equal to one if the individual has reported willingness to work more hours. The dependent variable in column (6) is a dependent variable equal to one if the individual has engaged in more than productive activity in the last seven days. The dependent variable in column (7) and (8) are in levels. The sample is restricted to private sector labourers aged 17-65, pooling data from the 2005 and 2013 LFS rounds, sampled in 453 districts in each round. There are only 81 districts where private sector labourer's are observed in both rounds. Individual observations are weighted by sampling weights that are proportional to district population. The means of district-level and individual-level controls is shown in Table **??**.* denotes significance at the 10%, ** at the 5% and, *** at the 1% level.

	=1 if employed	=1 if self-employed farmer	=1 if non-farming self-employed	=1 if employee	=1 if temporary worker
Panel A: Differences across woredas					
1 if PSNP-*woreda*	-0.010	-0.024	0.014	0.004	0.011
	(0.037)	(0.038)	(0.023)	(0.010)	(0.009)
Panel B: Difference across kebeles and woredas					
1 if PSNP-*woreda*	-0.028	-0.042	0.015	0.008	0.018
	(0.039)	(0.038)	(0.025)	(0.012)	(0.013)
1 if PSNP-*kebele*	0.028	0.027	0.001	-0.007	-0.014
	(0.026)	(0.027)	(0.017)	(0.014)	(0.014)
1 if household participated in PSNP	-0.076***	-0.075***	-0.010	-0.015*	-0.011
	(0.026)	(0.026)	(0.015)	(0.009)	(0.008)
p-value : *kebele* vs. *woreda*	.274	.186	.698	.505	.201
Unit of obs.	Individual	Individual	Individual	Individual	Individual
# Clusters	228	228	228	228	228
# Obs.	37980	37980	37980	37980	37980
Dep. Var. Mean	.58	.49	.13	.04	.03

	Days of hired labour post-harvest	Days of unpaid labour post-harvest	Daily wages for hired labourers post-harvest	Days of hired labour planting	Days of unpaid labour planting	Daily wages for hired labourers planting
Panel A: Differences across woredas						
1 if PSNP-*woreda*	-1.293	3.963	18.900	-20.896	-1.357	-58.234
	(5.061)	(5.060)	(65.268)	(17.486)	(2.881)	(36.112)
Panel B: Difference across kebeles and woredas						
1 if PSNP-*woreda*	-0.147	-2.371	56.651	-10.696	-3.349	-28.904
	(5.088)	(4.241)	(81.092)	(14.330)	(3.207)	(39.495)
1 if PSNP-*kebele*	-1.766	10.482**	-94.967*	-20.568	4.492	-64.398*
	(2.121)	(4.882)	(50.336)	(15.115)	(3.371)	(36.444)
1 if household participated in PSNP	-2.329*	-5.944*	-49.469**	-12.860	0.398	-15.915
	(1.347)	(3.253)	(20.412)	(11.966)	(2.984)	(52.772)
p-value : *kebele* vs. *woreda*	.773	.048	.214	.576	.168	.568
Unit of obs.	Household	Household	Household	Household	Household	Household
# Clusters	225	225	182	228	228	194
# Obs.	7903	7903	1943	8859	8859	1716
Dep. Var. Mean	11.51	14.64	122.41	27.26	11.65	116.93
Dep. Var. St. Dev.	133.53	93.58	400.12	450.71	68.12	291.6

	Fertiliser purchased	Days spent in watershed activities	Fertiliser used
Panel A: Differences across woredas			
1 if PSNP-*woreda*	-21.167	1.161	2.949
	(75.601)	(2.412)	(48.019)
Panel B: Difference across kebeles and woredas			
1 if PSNP-*woreda*	-19.688	-0.655	-7.223
	(77.537)	(2.766)	(43.838)
1 if PSNP-*kebele*	-9.679	2.661	15.986
	(59.284)	(1.838)	(21.771)
1 if household participated in PSNP	-43.130	-0.158	-25.037**
	(40.180)	(1.253)	(12.419)
p-value : *kebele* vs. *woreda*	.926	.401	.56
Unit of obs.	Household	Household	Household
# Clusters	228	214	228
# Obs.	7510	3909	6114
Dep. Var. Mean	197.4	16.92	88.88
Dep. Var. St. Dev.	891.21	13.71	635.27