BREAD-IGC
Virtual Ph.D. Course on Social Protection

Lecture 11: Spillovers and General Equilibrium Effects

November 25, 2025

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Lecture schedule:

Lecture 1: Introduction to the course
Lecture 2: Graduation programs
Lecture 3: Cash transfers
Lecture 4: The form of transfers: Cash, in-kind, vouchers
Lecture 5: Measuring the long-run impact of cash transfers
Lecture 6: Identifying program beneficiaries
Lecture 7: Digital technology and social protection
Lecture 8: Public health insurance
Lecture 9: Job displacement insurance
Lecture 10: Public work programs
Lecture 11: Spillovers and general equilibrium effects
Lecture 12: Social protection, conflict and reparations

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Any questions?

(1) Overview on general equilibrium effects

- Based on a chapter in *The Handbook of Social Protection: Evidence to Inform Policy in Low- and Middle-Income Countries* (Eds. R. Hanna + B. Olken)

- Many thanks to Sheah Deilami for excellent recent assistance, Paul Neihaus and Michael Walker for useful conversations, and Pascaline Dupas and Ben Olken for helpful comments.

(1) Overview on general equilibrium effects

- The chapter reviews studies of large-scale social protection (SP) programs in relation to their potential to create broader impacts for the economy and society
- Useful to delineate three major "categories" of effects:

(1) Within-household impacts (for instance, on the extent of intimate partner violence, IPV) and inter-generational effects (on long-run child outcomes)

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- Useful to delineate three major "categories" of effects:

(1) Within-household impacts (for instance, on the extent of intimate partner violence, IPV) and inter-generational effects (on long-run child outcomes)

(2) Effects mediated through market outcomes on other (non-recipient) local households and enterprises (including via prices and multiplier effects)

(3) Broader impacts on society – politics, governance, the state, norms, culture, etc. – including through fiscal externalities and the likelihood of armed conflict.

(1) Overview on general equilibrium effects

- For reasons of time, focus today mainly on **cash transfers** and Category #2 (although the others are reviewed in the chapter)
- A new and growing set of experimental studies on large-scale general equilibrium effects in development:

>> Effects of fiscal stimulus (cash transfers) + estimation of local transfer multipliers in rural Kenya in **Egger et al (2022) – main focus today** (plus some extensions)

- Related estimation of transfer multipliers of cash assistance in Brazil in Gerard et al (2024)

(1) Overview on general equilibrium effects

- Other major related topics in the social protection area:
- **Labor market interventions:** GE effects on labor markets in India in Muralidharan et al (2023)

>> Note related discussions in Franklin et al (2024), and Breza, Kaur & Shamdasani (2021, “Labor Rationing”)

- **Old-age pensions:** (see chapter and the discussion in Duhon et al 2023)

(2) Egger et al (2022)

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- Tracing out the pattern of transactions in an integrated economy and their contributions to aggregates such as overall output or well-being has long been one of the fundamental tasks of economic analysis
- E.g. effects of **fiscal stimulus**, including Keynes (1936) and more recently Chodorow-Reich (2019), Nakamura and Steinsson (2014); Auerbach, Gorodnichenko, and Murphy (2019)

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- Unifying micro + macro-development: an ambitious goal (see discussion in Muralidharan & Niehaus 2017 *JEP*)

>> These issues generally have not, however, been subjected to experimental examination

(2) Egger et al (2022)

- Broader view: interest in broader responses to cash transfers with the rise of large government programs
- Literature on effects for recipients on consumption, earnings, assets, food security, child growth and schooling, self-reported health, female empowerment, and psychological well-being (Bastagli et al. 2016)

- Yet we know much less about the **aggregate consequences**, even though cash transfers seem quite likely to have broader effects

>> Because cash functions as a medium of exchange, $1 a recipient uses to transact will mechanically show up on someone else's balance sheet

(2) Egger et al (2022)

- Egger et al (2022) link these literatures, use RCT methods to study the aggregate economic effects of a large-scale cash transfer in rural Kenya. Four advances:

1. A large influx of cash: $11M, 16% annual GDP in treated areas delivered over the peak 12 months
2. **Randomization across large units** generates spatial variation both at and above the village level

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1. A large influx of cash: $11M, 16% annual GDP in treated areas delivered over the peak 12 months
2. **Randomization across large units** generates spatial variation both at and above the village level
3. Extensive measurement for both recipients and non-recipients, nearby enterprises and markets, local government, etc., including high-frequency consumer goods prices. Census 65,385 households (with nearly 300,000 individuals), 12,095 non-farm enterprises
4. A theoretical framework to organize the results and interpret their implications for welfare

(2) Egger et al (2022)

- A framework (in appendix) to assess **welfare impacts** for non-recipients. The implications are (intuitively) that their welfare is improved to the extent that:

1. There are beneficial effects on their budget constraint set (due to either changing prices or income)
2. Others' behavioral changes generate positive spillovers

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- The framework also urges caution when examining the per capita consumption expenditure that is the "gold standard" welfare metric in development economics, since need to account for possible negative factors:

>>i.e. (i) appreciation of consumer goods prices, (ii) income gains due to increased labor supply, (iii) dis-saving assets

(2) Egger et al (2022)

- Consider household **indirect utility value function *v***:
- Let $v_i=(T_i, T)$ be the indirect utility attained by a household that receives a (possibly zero) transfer T_i while other eligible households in the area receive T. (For ineligible and control households, $T_i = 0$.)

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- Want to know how changes in T (the local cash infusions) affect *i*'s equivalent variation (EV) T_i^* defined by:

$$v_i(T_i^*, 0) = v_i(T_i, T)$$

- If no general equilibrium effects of local cash transfers, then T is irrelevant and we simply have $T_i^* = T_i$, i.e., the tautology that a dollar directly received is worth a dollar.

(2) Egger et al (2022)

- Think of v_i as the value of an underlying optimization:

$$v_i(T_i, T) = \max_{x_i} u_i(x_i, x_{-i}(T)) \text{ s.t. } x_i \in X(T_i, T)$$

- u_i captures preferences over own choices, which are constrained to lie in feasible budget set X, and choices x_{-i} of others, which matter for externalities, public goods, inequality preferences, etc. (The latter are non-market goods and thus harder to value.)

- Higher (real) output shows up as expansion of budget sets.

>> If due to productivity gains, this is a pure welfare gain; if due to increased employment of factors of production, this comes at some **opportunity cost** (e.g., disutility of labor) so consumption gains may overstate true welfare gains.

(2) Egger et al (2022)

- Setting in rural Kenya:

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- Setting in rural Kenya:
- ~100 households per village
- 4.3 household members and 2.2 children on average
- 98% of HH's in agriculture, 49% in self-employment, and 46% in wage work
- Respondent mean age is 50 years, 5 years of schooling
- Steady economic growth in study period; pre-COVID and no national elections

(2) Egger et al (2022)

- GiveDirectly distributes **unconditional cash transfers** as follows:

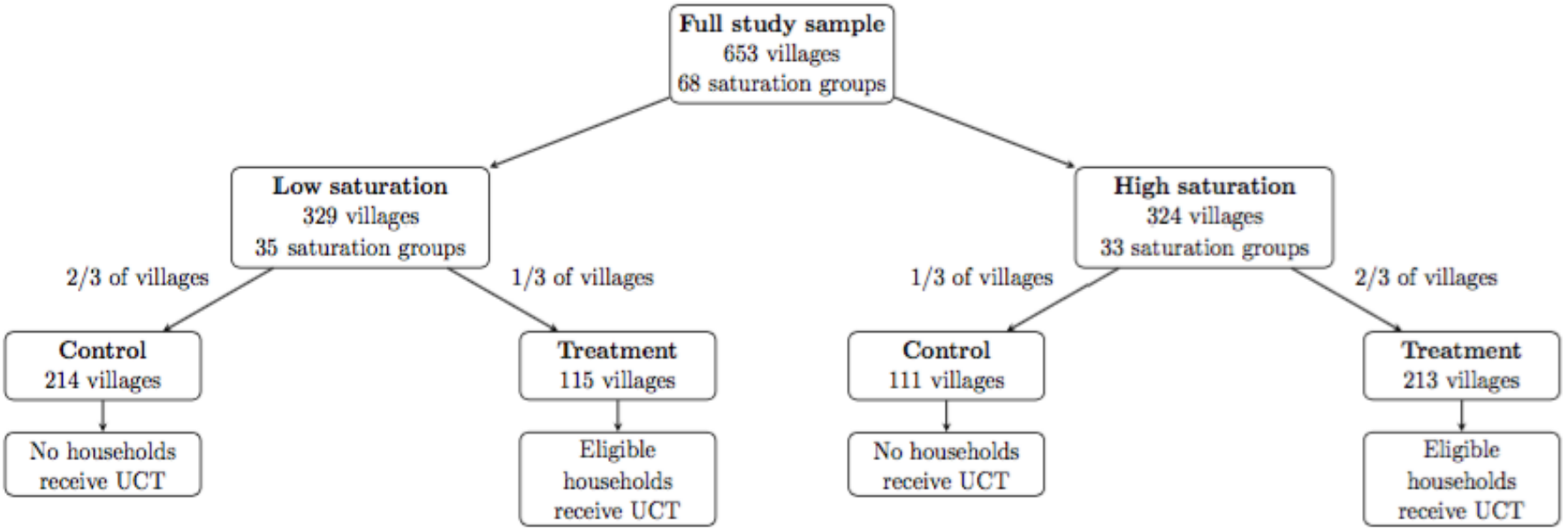
1. Enrolls roughly the poorest 1/3 of households in each village using a simple proxy means test (here, having a grass-thatched roof)
2. Coaches recipients to register for mobile money (M-Pesa), and distributes payments in 3 tranches over 8 months: a test payment, then two larger payments

- Transfer are large: USD 1,000 nominal / ~USD 1,871 PPP, equivalent to 75% of mean annual HH expenditure
- In aggregate, approximately 24% of annual GDP during full 24 month rollout period.

(2) Egger et al (2022)

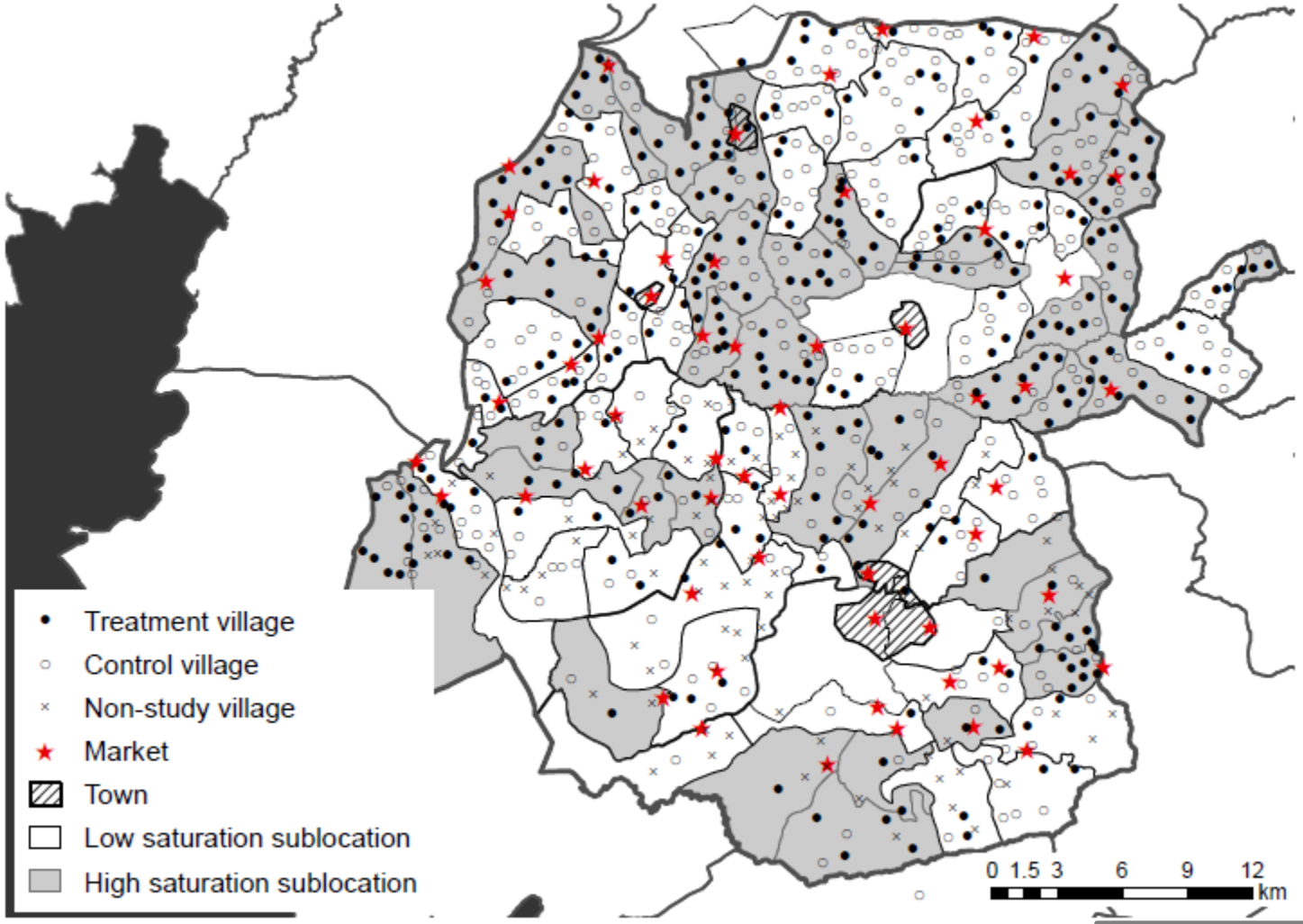
Figure 1: Study design and timeline

(a) Randomization



(2) Egger et al (2022)

Spatial exposure to treatment (1)



Densely populated area, with many proximate markets

(2) Egger et al (2022)

- More details on study area:
- Quite densely populated: 395 people/km^2 (over 4x the Kenyan average of 91)
- **8.5 other villages within 2 km radius** of a given village on average (31 villages within 4 km)

- Fairly good market access: 0.7 markets on average within 2 km radius of a given village (2.3 within 4 km)

>> Households report average commuting time to their preferred market of **31 minutes**. More than 80% walk this distance.

(2) Egger et al (2022)

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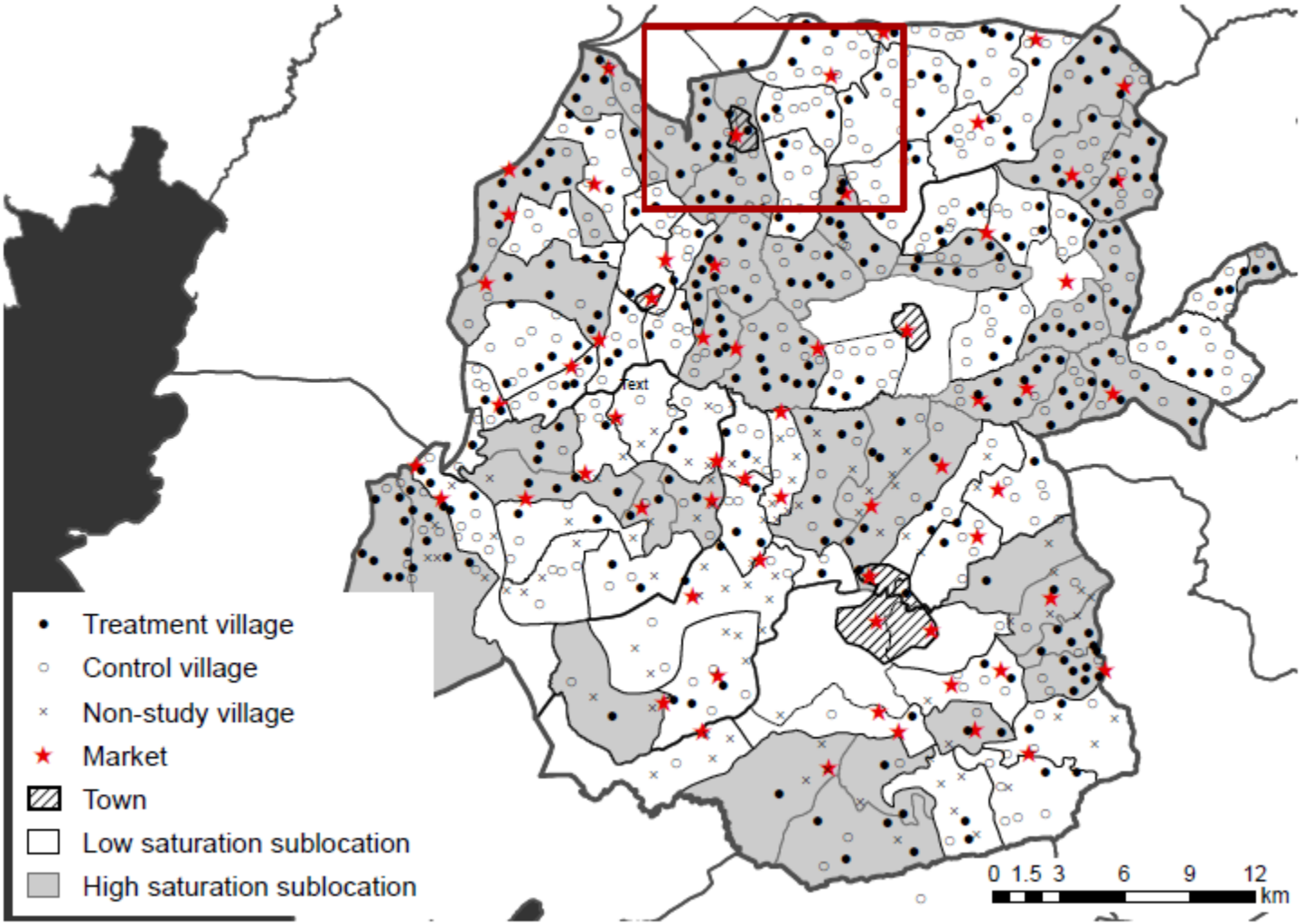
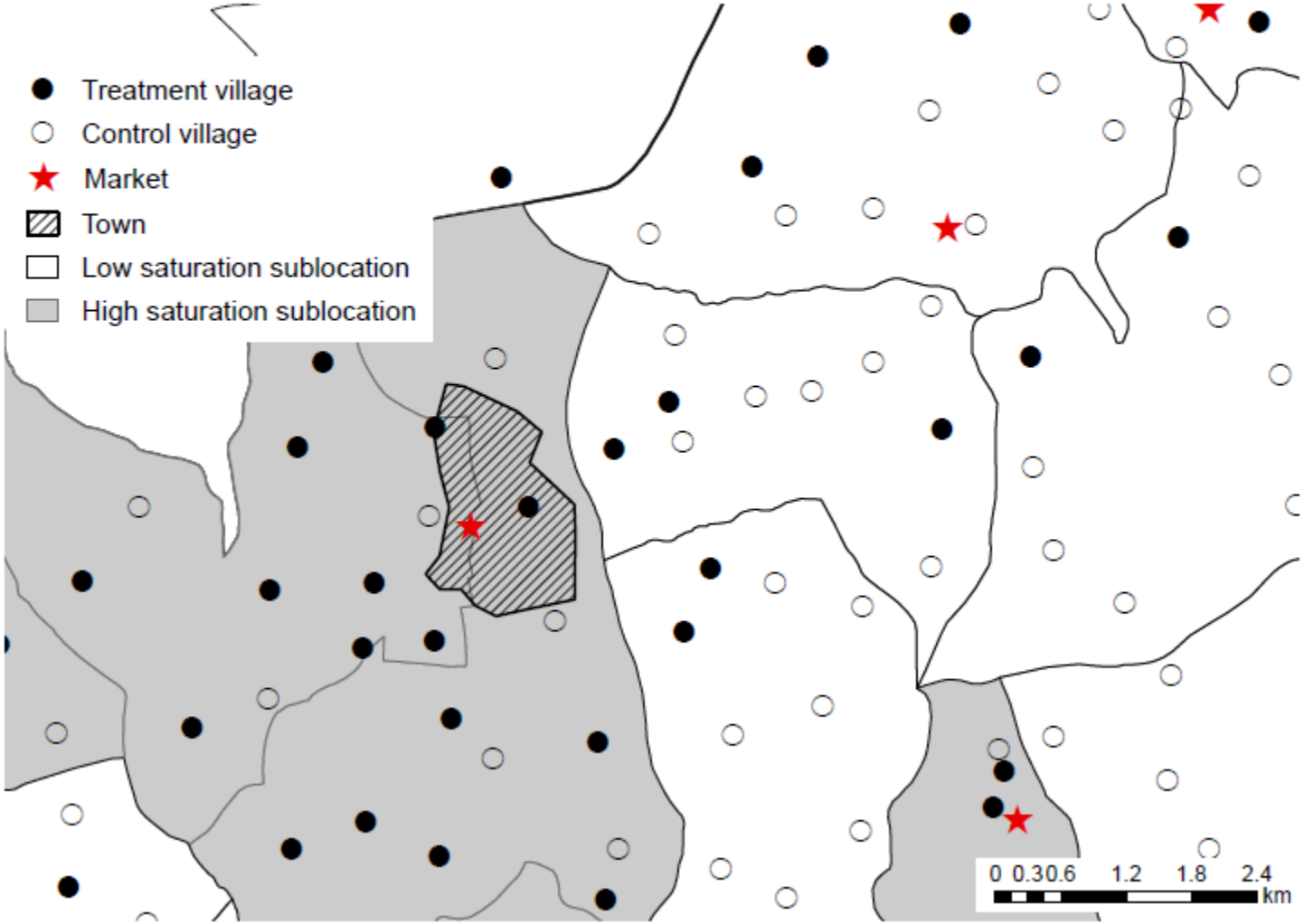


(2) Egger et al (2022)

Spatial exposure to treatment (2)



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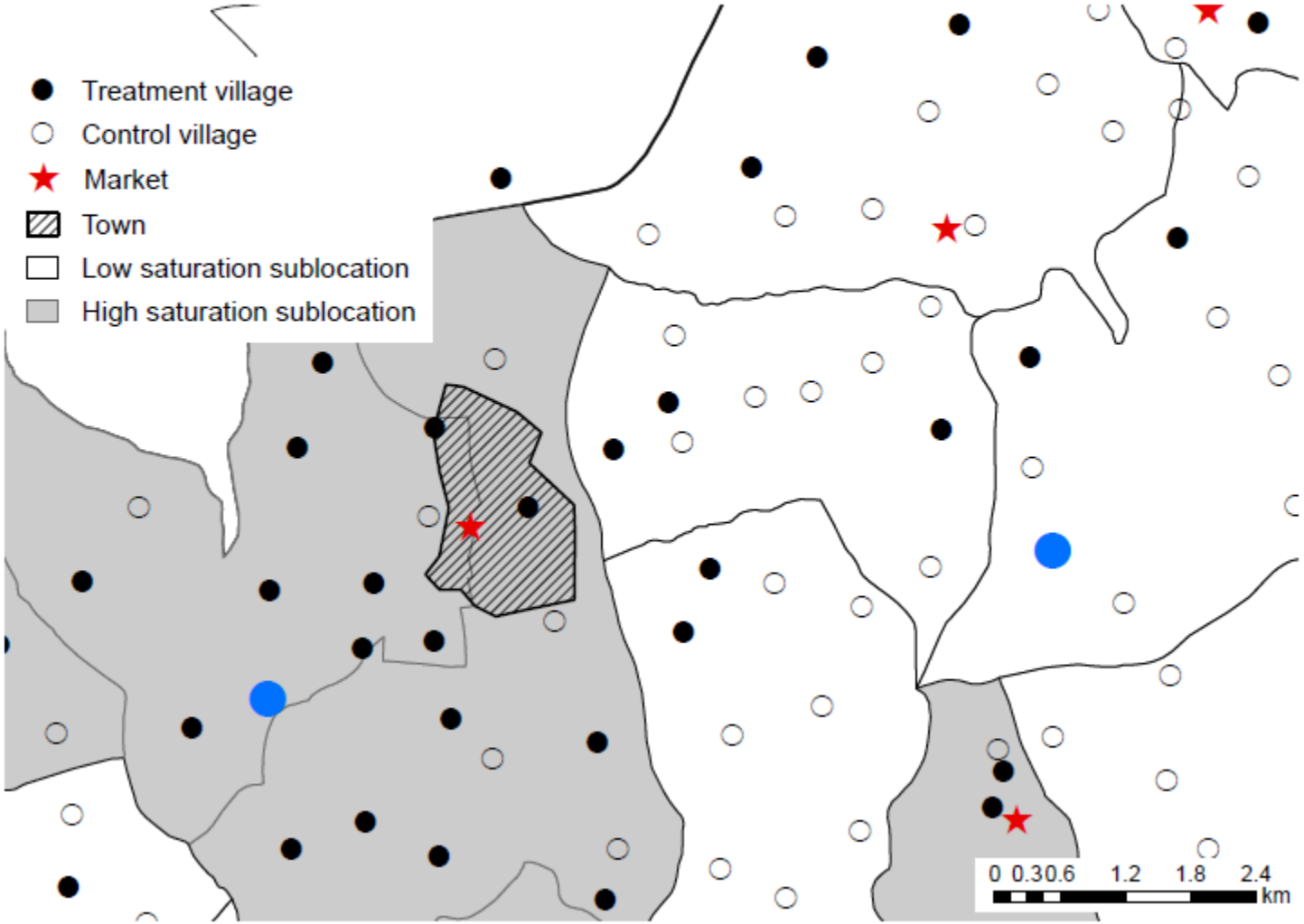

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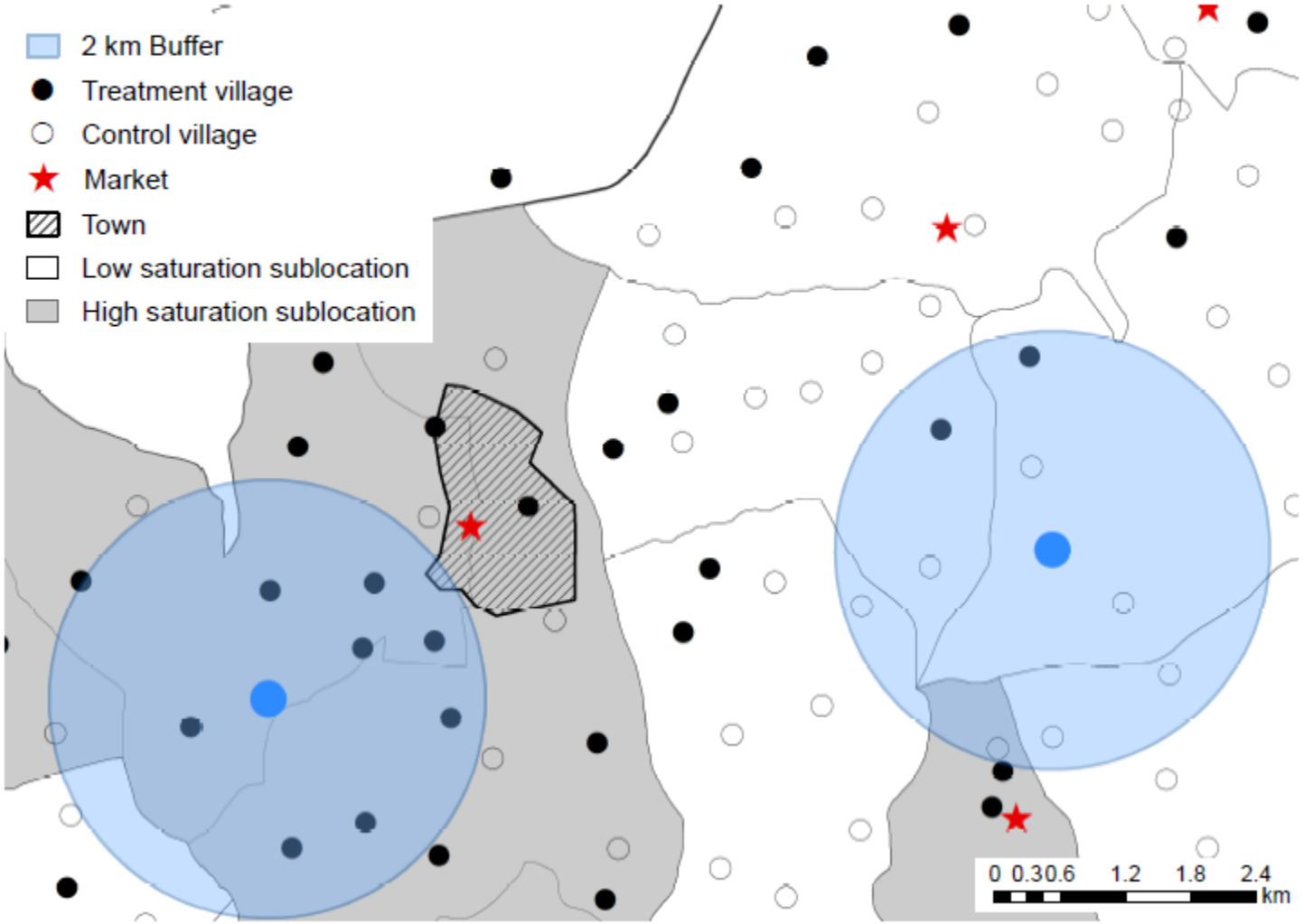

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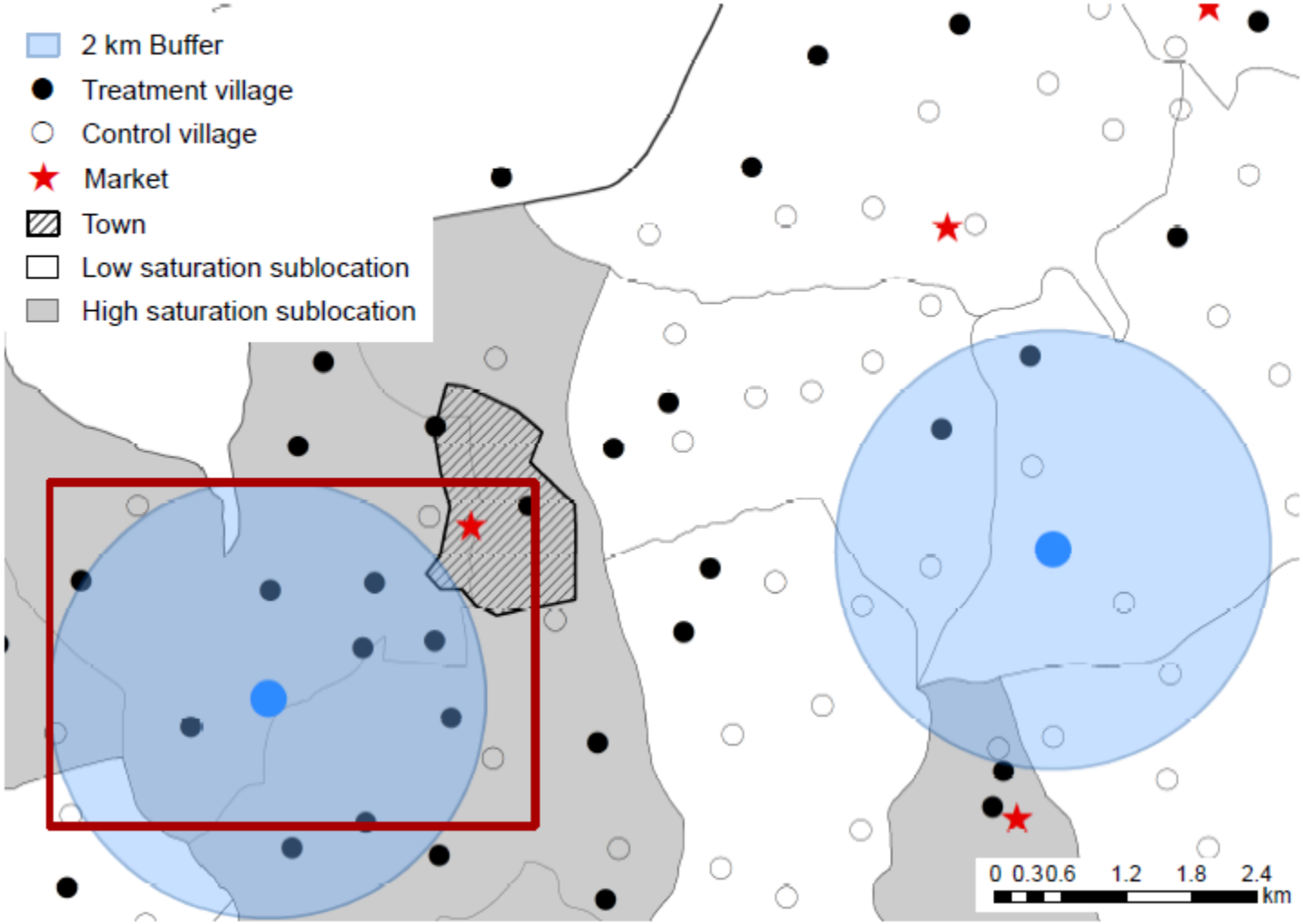

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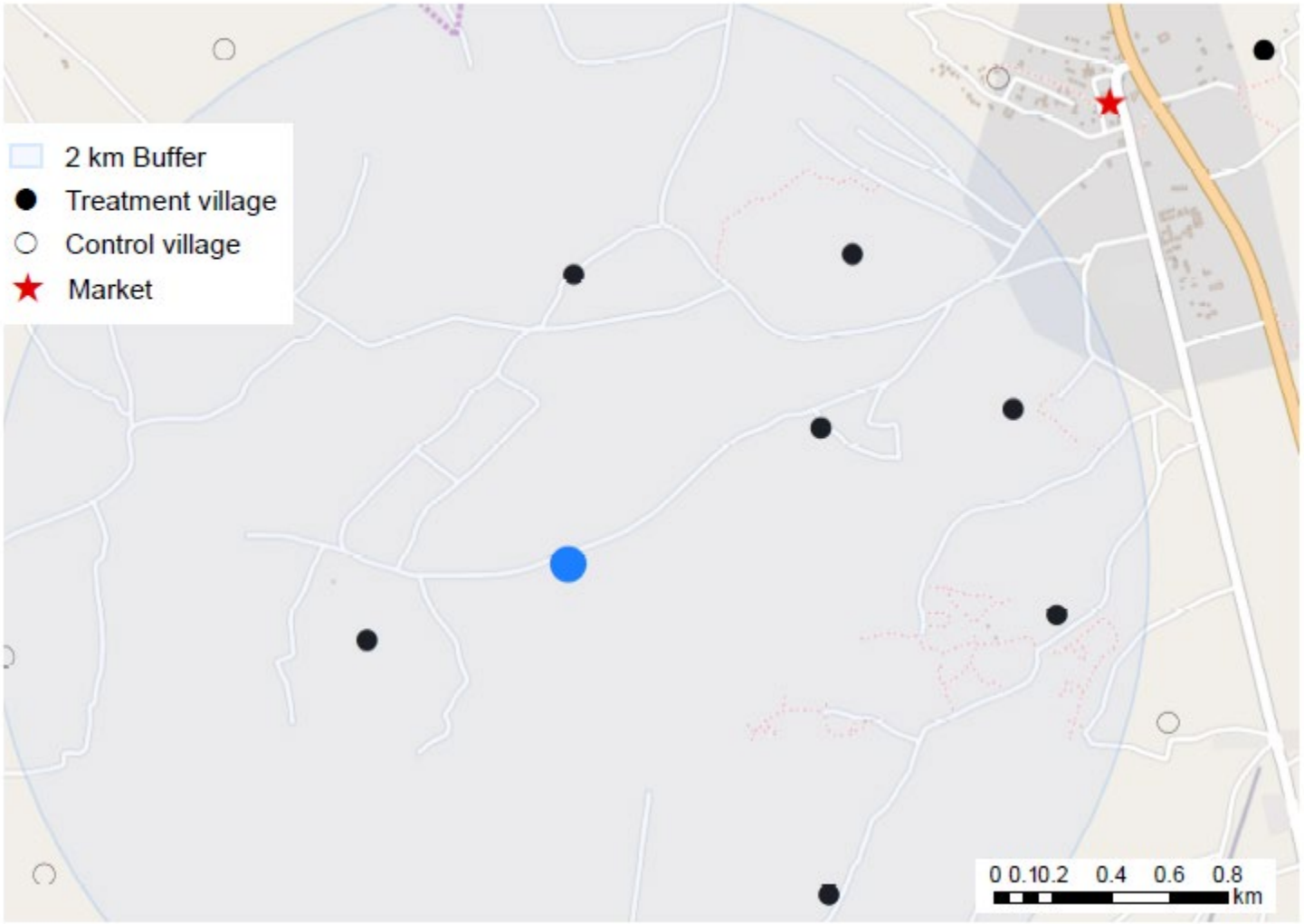

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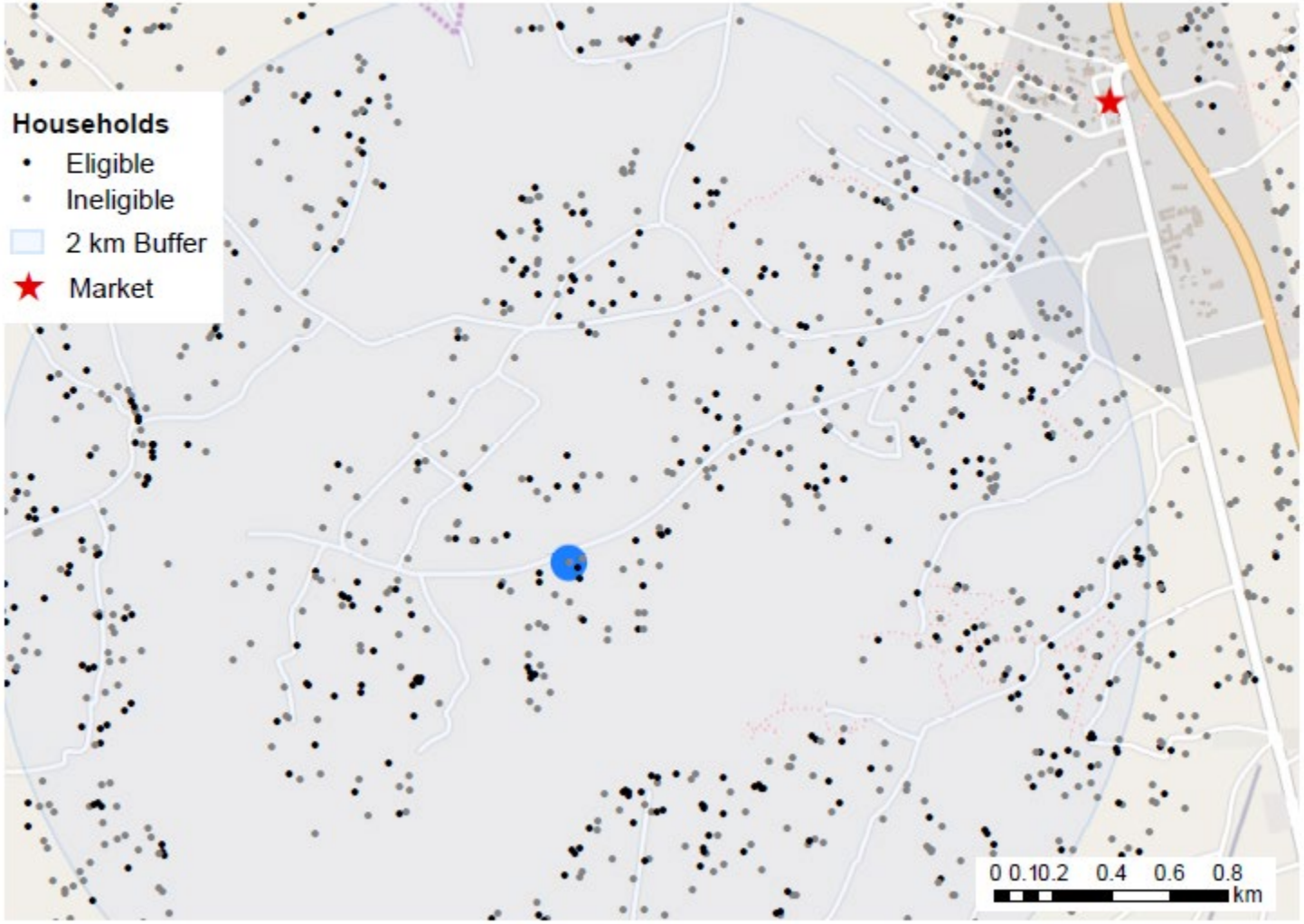

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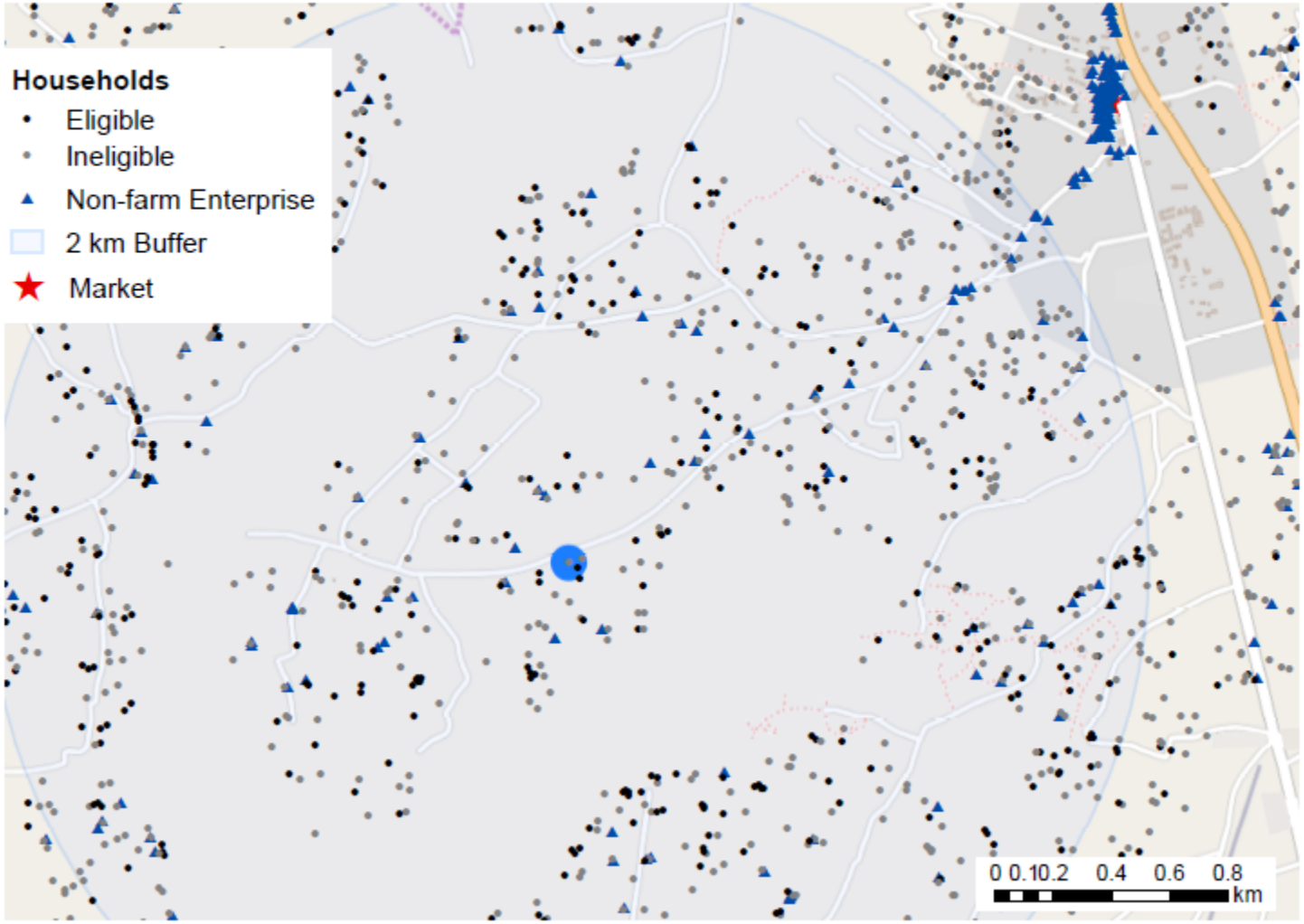

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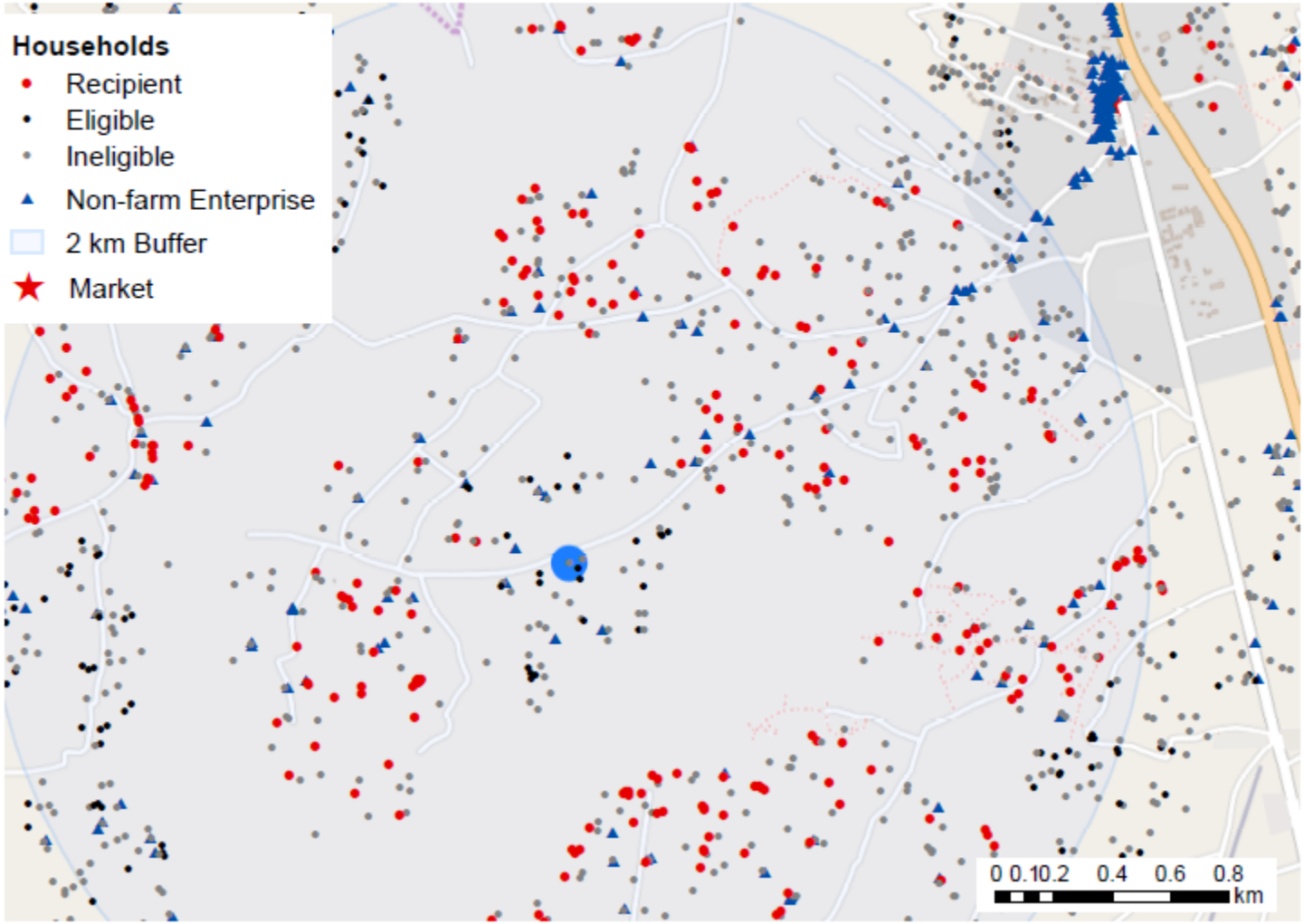

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- Main data sources:

1. **Household surveys:** at endline, ~8,200 households across 653 villages, surveyed 9-31 months after first transfer. 90% survey rate, no difference by treatment

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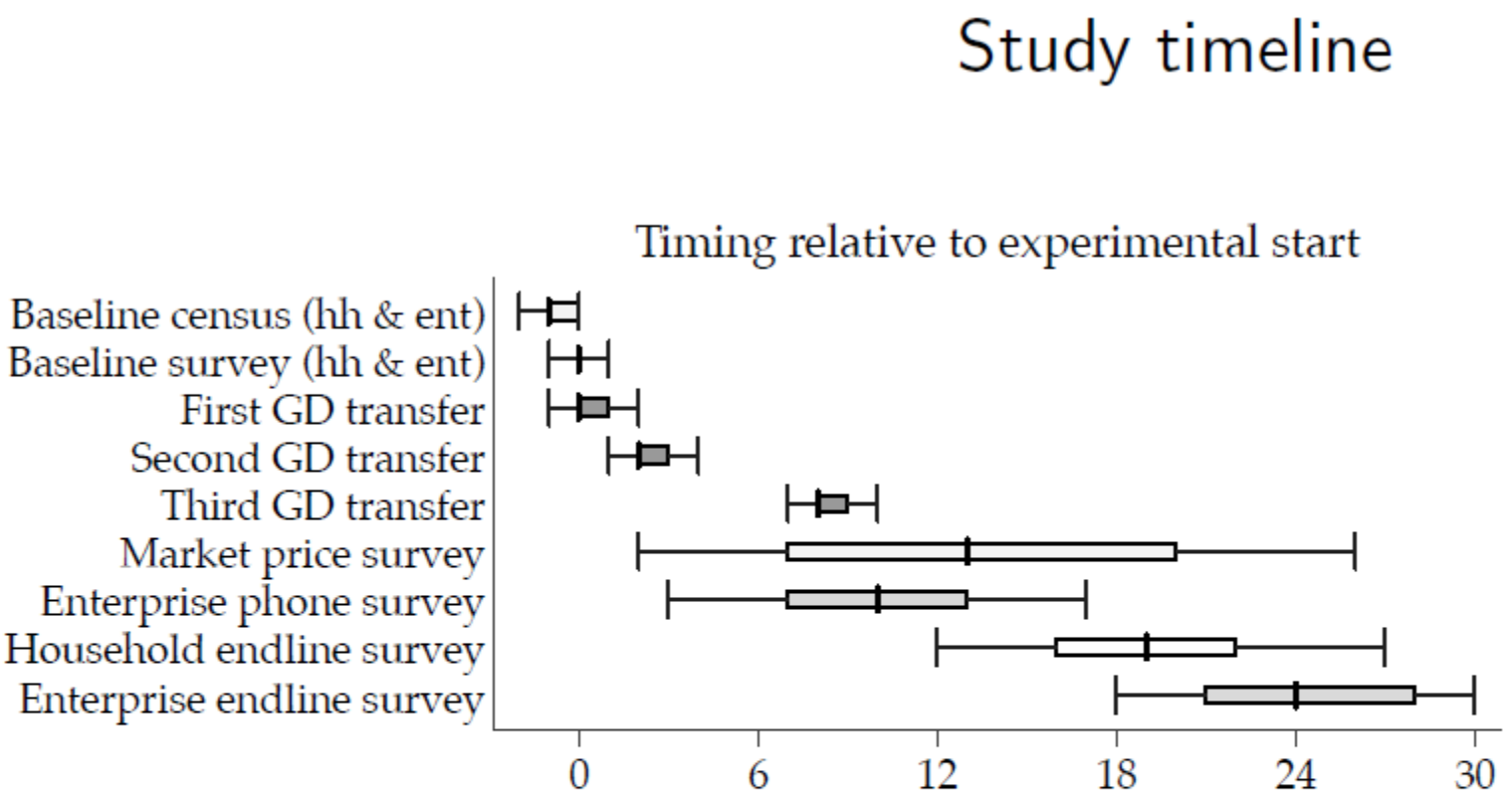
1. **Household surveys:** at endline, ~8,200 households across 653 villages, surveyed 9-31 months after first transfer. 90% survey rate, no difference by treatment
2. **Enterprise surveys:** from both household surveys (ag and non-ag self-employment modules), a distinct census and survey of 5 enterprises per village, (mostly) matched to owning households
3. **Market price surveys:** 61 markets x 72 major commodities x 3 vendors x 30 months
4. (Local government finances and surveys of officials.)

(2) Egger et al (2022)



Plots the 5th, 25th, 50th, 75th and 95th percentiles of study activities relative to the anticipated start of activities in each village. As markets were not assigned to treatment, we use the first date transfers were distributed within the subcounty in which the market is located. Surveys were conducted from August 2014 to June 2017.

(2) Egger et al (2022)

- Primarily interested in **total effects**, i.e., comparing to a counterfactual world with no intervention, thus estimate:

1. The **average total effect** on outcomes for treated and untreated households and firms, including:
   - Direct effects (for HHs) of own village treatment
   - Neighborhood effects (for HHs, firms) of treatment intensity, estimated within 2 km bands (as selected to minimize a Bayesian Information Criterion)

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   - Neighborhood effects (for HHs, firms) of treatment intensity, estimated within 2 km bands (as selected to minimize a Bayesian Information Criterion)
2. **Reduced form (ITT) treatment effect** on treated households, as a benchmark which assumes no neighborhood effects
3. **Neighborhood effects on prices**, incl. average effects & avg. effects in the month of maximum local transfers

(2) Egger et al (2022)

- Spatial econometric specification
- For village *i* in village *v*, we estimate:

$$y_{iv} = \alpha + \beta \mathrm{Amt}_v + \sum_{r=2}^{R} \beta_r \mathrm{Amt}_{v,r}^{\neg v} + \delta_1 y_{iv,t=0} + \delta_2 M_{iv} + \varepsilon_{iv}.$$

- Use the (cumulative) amount per capita transferred over course of the study to own village (Amt_v) and other villages in the *r* to *r* + *2* km band ($Amt_{v,r}^{\neg v}$)
- Instrument the two key terms, respectively, by own-village treatment indicator $Treat_v$, and share $s_{-v,r}^{e,t}$ of eligible HH's in villages (other than *v*) assigned to treatment (by band)

(2) Egger et al (2022)

>> Report the **average treatment effect (ATE)**,

$\hat{\beta} \cdot \overline{Amt_v} + \sum_r \widehat{\beta_r} \cdot \overline{Amt_{v,r}^{\neg v}}$, using mean transfer amounts per village and distance band

- Further econometric issues:
- Two modifications depending on the sample:

1. Untreated households: use $Amt_{v,r}$, so spillovers work entirely through the β_r terms (including own village).
2. Market prices: use amount distributed last quarter, add in month, market fixed effects (instead of instrumenting)

- Conley (1999, 2008) spatial standard errors; randomization inference results very similar.

(2) Egger et al (2022)

- Contrast to “standard” RCT specification
- Estimate the following with data for eligible households:

$$y_{ivs} = \alpha_1 \text{Treat}_v + \alpha_2 \text{HighSat}_s + \delta_1 y_{ivs,t=0} + \delta_2 M_{ivs} + \varepsilon_{ivs}$$

- α_1: benchmark effect for T vs. C village. Captures direct effects and within-village indirect effects (similar to Miguel and Kremer 2004)
- α_2: High v. Low saturation sublocation effect. Does not exploit all experimental variation in exposure to transfers.
- Weighted by inverse sampling probabilities to be representative of the population of eligible HH’s
- Include lagged dependent variable, $y_{ivs,t=0}$, when available (ANCOVA); SE’s clustered by village.

(2) Egger et al (2022)

- Empirical results: start by **tracing the flow of funds**.
- Impacts on recipient households →

  Impacts on local enterprises →

  Impacts on non-recipient households →

  Impacts on output and input prices

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>> Then discuss how these effects "add up" to total local GDP, and compute the **transfer multiplier** of the program

- Finally, examine "non-market" outcomes ($x_{-i}(T)$, e.g., public goods), externalities, and other dimensions of wellbeing (i.e., stated happiness, education, health, etc.)

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TABLE I

EXPENDITURES, SAVINGS AND INCOME.

	(1)	(2)	(3)	(4)
	Recipient Households		Non-Recipient Households	
	1(Treat Village) Reduced Form	Total Effect IV	Total Effect IV	Control, Low-Saturation Mean (SD)
Panel A: Expenditure				
Household expenditure, annualized	293.59	338.57		2536.01
	(60.11)	(109.38)		(1933.51)
Non-durable expenditure, annualized	187.65	227.20		2470.69
	(58.59)	(99.63)		(1877.23)
Food expenditure, annualized	72.04	133.84		1578.05
	(36.96)	(63.99)		(1072.00)
Temptation goods expenditure, annualized	6.55	5.91		37.07
	(5.79)	(8.82)		(123.54)
Durable expenditure, annualized	95.09	109.01		59.41
	(12.64)	(20.24)		(230.83)
Panel B: Assets				
Assets (non-land, non-house), net borrowing	178.78	183.38		1131.66
	(24.66)	(44.26)		(1419.70)
Housing value	376.92	477.29		2032.11
	(26.37)	(38.80)		(5028.27)
Land value	51.28	158.47		5030.03
	(186.22)	(260.91)		(6604.66)

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	𝟙(Treat Village) Reduced Form	Total Effect IV	Total Effect IV	Control, Low-Saturation Mean (SD)
Panel C: Household balance sheet				
Household income, annualized	79.43	135.70		1023.36
	(43.80)	(92.10)		(1634.02)
Net value of household transfers	−1.68	−7.43		130.08
received, annualized	(6.81)	(13.06)		(263.65)
Tax paid, annualized	1.94	−0.09		16.92
	(1.28)	(2.02)		(36.50)
Profits (ag & non-ag), annualized	26.24	35.85		485.56
	(23.67)	(47.66)		(786.92)
Wage earnings, annualized	42.43	73.66		494.95
	(32.23)	(60.82)		(1231.12)

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- Finally, examine "non-market" outcomes (e.g., public goods), externalities, and other dimensions of wellbeing (i.e., stated happiness, education, health, etc.)

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TABLE III

ENTERPRISE OUTCOMES.

	(1)	(2)	(3)	(4)
	Treatment Villages		Control Villages	
	𝟙(Treat Village) Reduced Form	Total Effect IV	Total Effect IV	Control, Low-Saturation Weighted Mean (SD)
Panel A: All enterprises				
Enterprise profits, annualized	−2.27	55.77	35.08	156.79
	(21.42)	(36.73)	(37.36)	(292.84)
Enterprise revenue, annualized	−29.61	322.16	237.16	494.45
	(102.74)	(138.17)	(112.72)	(1223.07)
Enterprise costs, annualized	−13.32	89.35	73.08	117.22
	(28.63)	(38.51)	(46.77)	(263.46)
Enterprise wage bill, annualized	−15.90	75.99	66.57	97.35
	(25.49)	(30.64)	(35.86)	(237.01)
Enterprise profit margin	0.01	−0.11	−0.12	0.33
	(0.02)	(0.06)	(0.05)	(0.30)
Panel B: Non-agricultural enterprises				
Enterprise inventory	11.02	34.69	16.90	50.41
	(9.14)	(13.39)	(10.66)	(131.86)
Enterprise investment, annualized	4.00	13.58	6.82	46.57
	(7.05)	(13.10)	(7.96)	(167.44)
Panel C: Village-level				
Number of enterprises	0.01	0.02	0.01	1.12
	(0.01)	(0.01)	(0.01)	(0.14)

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Assets (non-land, non-house), net borrowing	178.78	183.38	133.06	1131.66
	(24.66)	(44.26)	(78.33)	(1419.70)
Housing value	376.92	477.29	80.65	2032.11
	(26.37)	(38.80)	(215.81)	(5028.27)
Land value	51.28	158.47	544.85	5030.03
	(186.22)	(260.91)	(459.57)	(6604.66)

(2) Egger et al (2022)

TABLE I

EXPENDITURES, SAVINGS AND INCOME.

	(1)	(2)	(3)	(4)
	Recipient Households		Non-Recipient Households	
	𝟙(Treat Village) Reduced Form	Total Effect IV	Total Effect IV	Control, Low-Saturation Mean (SD)
Panel C: Household balance sheet				
Household income, annualized	79.43	135.70	224.96	1023.36
	(43.80)	(92.10)	(85.98)	(1634.02)
Net value of household transfers	−1.68	−7.43	8.85	130.08
received, annualized	(6.81)	(13.06)	(19.11)	(263.65)
Tax paid, annualized	1.94	−0.09	1.68	16.92
	(1.28)	(2.02)	(2.02)	(36.50)
Profits (ag & non-ag), annualized	26.24	35.85	36.37	485.56
	(23.67)	(47.66)	(44.88)	(786.92)
Wage earnings, annualized	42.43	73.66	182.63	494.95
	(32.23)	(60.82)	(65.53)	(1231.12)

(2) Egger et al (2022)

- Empirical results: start by **tracing the flow of funds**.
- Impacts on recipient households →

  Impacts on local enterprises →

  Impacts on non-recipient households →

  Impacts on output and input prices

>> Then discuss how these effects "add up" to total local GDP, and compute the **transfer multiplier** of the program

- Finally, examine "non-market" outcomes (e.g., public goods), externalities, and other dimensions of wellbeing (i.e., stated happiness, education, health, etc.)

(2) Egger et al (2022)

TABLE IV

OUTPUT PRICES.

		(1)	(2)	(3)	(4)
		Overall Effects		ATE by Market Access	
		ATE	Average Maximum Effect (AME)	Below Median	Above Median
All goods		0.0010	0.0042	0.0017	0.0007
		(0.0006)	(0.0031)	(0.0009)	(0.0007)
By tradability	More tradable	0.0014	0.0062	0.0023	0.0021
		(0.0015)	(0.0082)	(0.0023)	(0.0018)
	Less tradable	0.0009	0.0034	0.0015	0.0001
		(0.0006)	(0.0032)	(0.0011)	(0.0008)
By sector	Food items	0.0009	0.0036	0.0016	0.0002
		(0.0006)	(0.0033)	(0.0012)	(0.0008)
	Non-durables	0.0014	0.0061	0.0026	0.0019
		(0.0017)	(0.0089)	(0.0026)	(0.0019)
	Durables	0.0019	0.0070	−0.0009	0.0034
		(0.0011)	(0.0061)	(0.0011)	(0.0016)
	Livestock	−0.0008	−0.0027	−0.0008	−0.0017
		(0.0010)	(0.0052)	(0.0004)	(0.0020)
	Temptation goods	−0.0011	−0.0112	−0.0008	−0.0003
		(0.0026)	(0.0143)	(0.0036)	(0.0035)

Small price effects, all <1%, and v. precisely estimated.

(2) Egger et al (2022)

TABLE II

INPUT PRICES AND QUANTITIES.

	(1)	(2)	(3)	(4)
	Recipient Households		Non-Recipient Households	
	1(Treat Village) Reduced Form	Total Effect IV	Total Effect IV	Control, Low-Saturation Mean (SD)
Panel A: Labor				
Hourly wage earned by employees	0.10	0.04	0.19	0.70
	(0.03)	(0.04)	(0.10)	(0.89)
Household total hours worked, last 7 days	2.44	1.41	−4.69	63.19
	(1.71)	(3.69)	(3.17)	(54.12)
Panel B: Land				
Land price per acre	168.02	366.46	557.44	3952.48
	(201.18)	(290.85)	(412.34)	(3147.29)
Acres of land owned	−0.19	−0.10	0.08	1.42
	(0.14)	(0.09)	(0.10)	(2.37)
Panel C: Capital				
Loan-weighted interest rate, monthly	−0.01	0.01	−0.01	0.06
	(0.01)	(0.01)	(0.01)	(0.07)
Total loan amount	5.53	3.12	6.12	80.57
	(4.95)	(8.34)	(13.23)	(204.28)

(2) Egger et al (2022)

- Empirical results: start by **tracing the flow of funds**.
- Impacts on recipient households →

  Impacts on local enterprises →

  Impacts on non-recipient households →

  Impacts on output and input prices

>> Then discuss how these effects "add up" to total local GDP, and compute the **transfer multiplier** of the program

- Finally, examine "non-market" outcomes (e.g., public goods), externalities, and other dimensions of wellbeing (i.e., stated happiness, education, health, etc.)

(2) Egger et al (2022)

- Define the transfer multiplier as:

$$M = \frac{1}{T}\left(\int_{t=0}^{t=\bar{t}} \Delta GDP_t\right)$$

where *T* denotes the initial aggregate transfer into a local economy, then measure the resulting change in income over a finite time (here roughly two years post-transfer).

>> Estimate using a similar spatial econometric specification as before, but including terms for lagged local transfers (and bootstrap standard errors)

- Recent well-identified fiscal multiplier estimates from U.S. stimulus spending in the range of 1.5-2.0 (Chodorow-Reich 2019)

(2) Egger et al (2022)

- What does macroeconomic theory say about where local economic multipliers are likely to be largest? (Farhi and Werning 2016)

1. Closed local economy (within a currency union)
2. Receiving external transfers (so no future tax burden)
3. Incomplete markets (harder to save, less credit)
4. Large share of "hand-to-mouth" consumers, i.e., **high marginal propensity to consume (MPC)**

>> The data suggests the marginal propensity to consume local goods (MPC_{Local}) is approximately 0.70-0.76. In a basic static Keynesian model, the transfer multiplier would be $MPC_{Local} / (1 - MPC_{Local}) \approx 3$.

(2) Egger et al (2022)

- Two approaches to computing local GDP, based on:

1. **Expenditures** (with HH consumption and accumulated assets, enterprise investment and accumulated inventories, local government spending, net exports)
2. **Income** (with HH wages, enterprise profits and rental income, taxes collected, net income from "abroad")

(2) Egger et al (2022)

TABLE V

TRANSFER MULTIPLIER ESTIMATES.

	(1) $\mathbb{M}$ Estimate	(2) H_0: $\mathbb{M} < 0$ p-Value	(3) H_0: $\mathbb{M} < 1$ p-Value
Panel A: Expenditure multiplier	2.58	0.03	0.14
	(1.44)		
Household non-durable expenditure	1.20	0.18	
	(1.31)		
Household durable expenditure	0.84	0.00	
	(0.05)		
Enterprise investment	0.48	0.14	
	(0.43)		
Enterprise inventory	0.07	0.02	
	(0.03)		
Panel B: Income multiplier	2.47	0.07	0.20
	(1.71)		
Enterprise profits	1.68	0.10	
	(1.27)		
Household wage bill	0.69	0.26	
	(1.09)		
Enterprise capital income	0.06	0.36	
	(0.17)		
Enterprise taxes paid	0.04	0.09	
	(0.03)		
Panel C: Expenditure and income multipliers			
Average of both multipliers	2.52	0.03	0.14
	(1.39)		
Joint test of both multipliers		0.01	0.07

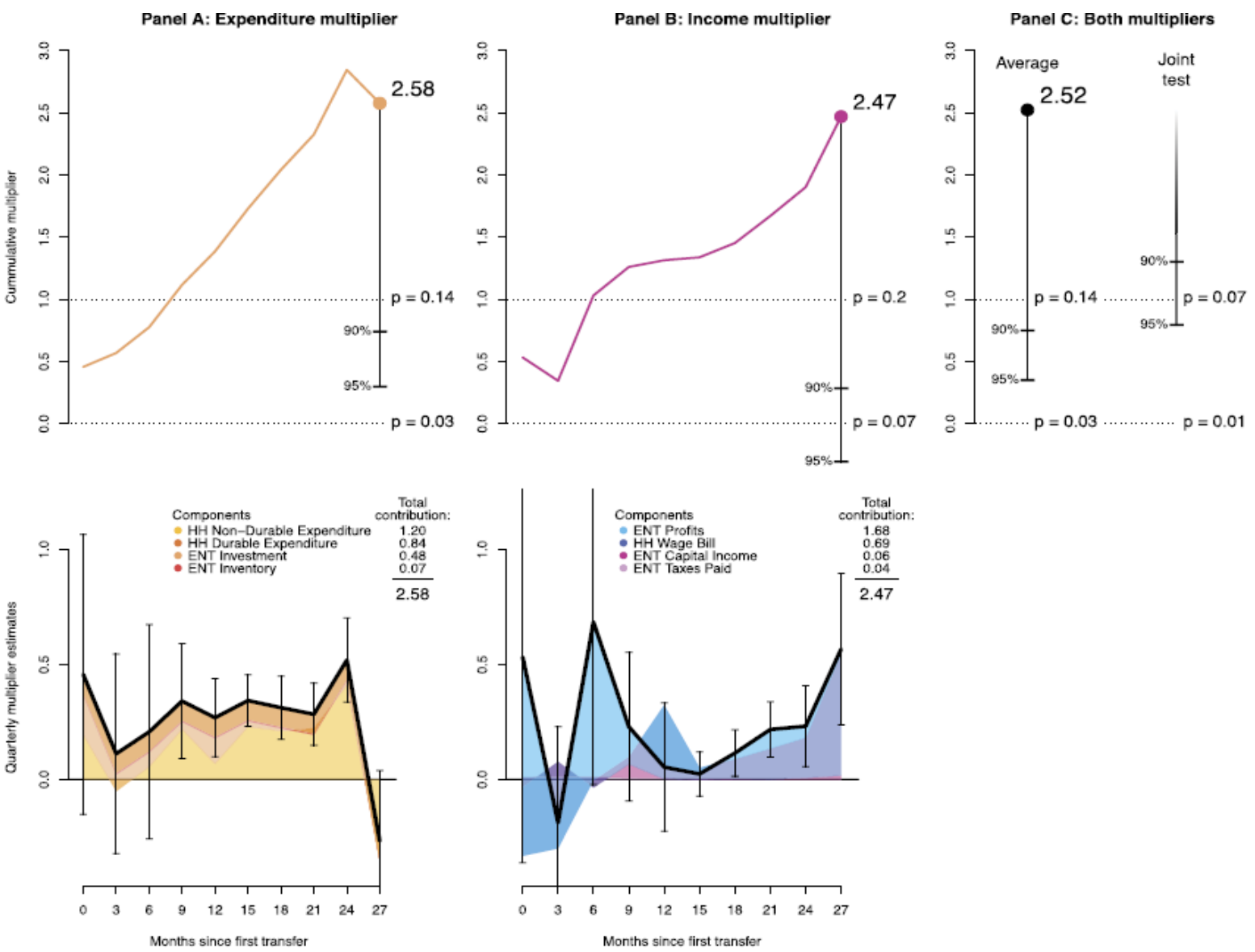

FIGURE 1.—Transfer multiplier over time. *Notes*: Panel A shows the cumulative expenditure multiplier over the first 29 months after start of the transfers in the top panel, and the corresponding quarterly impulse response function (IRF) in the bottom panel. The integral under this IRF yields our overall point estimate of 2.58. Colored areas below the IRF represent the different components of expenditure and the adjacent table indicates their total (over time) contribution. Darker shading indicates cases where a component turns neg-

(2) Egger et al (2022)

- Empirical results: start by **tracing the flow of funds**.
- Impacts on recipient households →

  Impacts on local enterprises →

  Impacts on non-recipient households →

  Impacts on output and input prices

>> Then discuss how these effects "add up" to total local GDP, and compute the **transfer multiplier** of the program

>> The transfer multiplier estimates are consistent with the estimated **marginal propensity to spend** locally of approximately 0.70-0.76 (in our data and Haushofer & Shapiro 2016)

(2) Egger et al (2022)

- Empirical results: start by **tracing the flow of funds**.
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  Impacts on local enterprises →

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  Impacts on output and input prices

>> Then discuss how these effects "add up" to total local GDP, and compute the **transfer multiplier** of the program

- Finally, examine **"non-market" outcomes** (e.g., public goods), externalities, and other dimensions of wellbeing (i.e., stated happiness, education, health, etc.)

(2) Egger et al (2022)

TABLE B.VI

NON-MARKET OUTCOMES AND EXTERNALITIES.

	(1)	(2)	(3)	(4)
	Recipient Households		Non-Recipient Households	
	𝟙(Treat Village) Reduced Form	Total Effect IV	Total Effect IV	Control, Low-Saturation Mean (SD)
Psychological well-being index	0.09	0.12	0.08	0.01
	(0.03)	(0.07)	(0.06)	(1.01)
Health index	0.03	0.06	0.01	0.03
	(0.03)	(0.06)	(0.05)	(1.01)
Food security index	0.10	0.05	0.08	0.01
	(0.03)	(0.07)	(0.06)	(1.00)
Children food security	0.13	0.17	0.09	−0.04
	(0.04)	(0.08)	(0.09)	(1.12)
Education index	0.09	0.09	0.10	0.01
	(0.04)	(0.05)	(0.06)	(1.02)
Female empowerment index	−0.01	0.08	0.09	0.05
	(0.07)	(0.14)	(0.15)	(0.94)
Security index	0.11	−0.02	−0.02	0.03
	(0.04)	(0.07)	(0.07)	(0.96)

(2) Egger et al (2022)

TABLE B.VII

INEQUALITY.

	(1)	(2)	(3)	(4)
	Treatment Villages		Control Villages	
	1(Treat Village) Reduced Form	Total Effect IV	Total Effect IV	Control, Low-Saturation Weighted Mean (SD)
Panel A: Expenditure				
Gini coefficient	0.7	0.8	0.2	32.3
	(0.7)	(1.3)	(1.1)	(7.8)
Counterfactual Gini coefficient	−1.1	−2.1	0	32.3
	(0.7)	(1.3)		(7.8)
p-value: effect = counterfactual effect	$p = 0.08$	$p = 0.05$	$p = 0.84$	
Panel B: Assets				
Gini coefficient	−1.1	2.2	2.8	45.4
	(0.9)	(1.6)	(1.4)	(10.1)
Counterfactual Gini coefficient	−7.6	−6.7	0	45.8
	(0.8)	(0.5)		(10.7)
p-value: effect = counterfactual effect	$p = 0.00$	$p = 0.00$	$p = 0.04$	

(2) Egger et al (2022)

- Viewed through the lens of the conceptual framework:

(1) The evidence points to a **welfare-improving expansion in the budget sets** of non-recipient households

- Large increases in income, driven by higher labor income without increases in labor supply, and no meaningful consumer price inflation
- Comparably large gains in expenditure without dissaving

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- Large increases in income, driven by higher labor income without increases in labor supply, and no meaningful consumer price inflation
- Comparably large gains in expenditure without dissaving

(2) Data on welfare changes via **externalities suggests these were generally either zero** or slightly positive

- No meaningful changes in crime, public goods provision
- Generally positive but insignificant intra-HH effects
- Caveat: marginal increase in asset inequality

(2) Egger et al (2022)

- Where do these real output gains come from?
- Recall that enterprise sales increase substantially with only negligible increases in consumer prices

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- Where do these real output gains come from?
- Recall that enterprise sales increase substantially with only negligible increases in consumer prices
- In accounting terms, value of increased output reflects:

1. Increased throughput of **intermediates**, finished goods produced elsewhere – seems likely given the large retail share, though not directly measured
2. Increased value added through **increased use of factors** of production – little evidence of this for labor or capital; and land is in relatively fixed supply
3. Increased value added through **increased utilization of existing capacity** – some evidence of low baseline utilization (“slack”)

(2) Egger et al (2022)

- A large share of the (non-agricultural) economy consists of retail or “on-demand” manufacturing (e.g., grain *posho* mill) or services (e.g., barbershop) which require someone to “mind the shop” even when no customers
- In Uganda, Bassi et al (2022, *Econometrica*) find that employees in manufacturing (welding, furniture-making) spend ~25% of time “waiting for customers" or “eating and resting"

(2) Egger et al (2022)

- Consistent with **“slack”**: non-ag enterprises have an average of just 1.9 customers per hour they are open, and majority (72%) have one employee, suggesting that integer constraints often bind

>> Harkens back to classic theory in development economics on surplus labor (Lewis 1954).

- **Walker et al (2024, WP)** develops a model of how slack could emerge among small profit-maximizing firms in settings like rural Kenya + quantifies how much of the multiplier this one friction could account for. (Punchline: a substantial portion of the multiplier.)

(2) Egger et al (2022)

- Summarizing, **meaningful increases** in aggregate local economic activity due to a large inflow of cash transfers

1. Increases in expenditure and assets of recipients, revenue for nearby enterprises, and earnings, expenditure and assets of non-recipients
2. Minimal, precisely estimated consumer price inflation
3. An aggregate transfer multiplier of approximately 2.5

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>> **External validity:** multiplier effects could be smaller in urban or wealthier settings with fewer “hand-to-mouth” consumers (lower MPC), and more open economies (more trade outside the local area). Plus inflationary effects of printing money vs. external assistance (here).

(2) Egger et al (2022)

- Concerns about negative spillovers were **not** borne out; rather, unadjusted T-C estimates would doubly under-count welfare gains (as in Miguel & Kremer 2004)

>> More broadly, a counter-example to the critique that RCT's are not well suited to studying **the "big questions"** related to general equilibrium effects, aggregate impacts, and multipliers in economics (Bardhan 2005, Easterly 2006, Deaton 2010)

(2) Egger et al (2022)

- Follow-up work on health impacts: Walker et al (2025) estimates impacts of the GiveDirectly cash transfer program on child (under-5) and infant (under-1) mortality
- Utilizes a novel census of all births (N=100,000) in the study region (with pop. > 300,000)

(2) Egger et al (2022)

- Follow-up work on health impacts: Walker et al (2025) estimates impacts of the GiveDirectly cash transfer program on child (under-5) and infant (under-1) mortality
- Utilizes a novel census of all births (N=100,000) in the study region (with pop. > 300,000)
- Central finding: **substantial reductions of >40%** in both child and infant mortality among those eligible (i.e., poorer) households that received cash transfers and were exposed to local spillovers.

>> A likely channel: sharp increase in hospital deliveries.

- Highly cost-effective way to reduce child deaths, on top of the economic gains documented.

(3) Labor market effects (Muralidharan et al 2023)

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- Focuses on the impacts of a treatment that **improved implementation and enrollment in NREGA** (using biometric smart cards), which had been randomized across N=157 sub-districts in India

(3) Labor market effects (Muralidharan et al 2023)

- Focuses on the impacts of a treatment that **improved implementation and enrollment in NREGA** (using biometric smart cards), which had been randomized across N=157 sub-districts in India
- Earlier work (Muralidharan et al 2016) showed this improved program targeting and efficiency, leading to higher enrollment and earnings for those in the program. (Not quite a cash transfer since tied to labor supply.)

- But what about the broader effects on the local economy of this intervention?

(3) Labor market effects (Muralidharan et al 2023)

- The earlier work had already established that **local wages rose**: this is sensible if the large government program provided a wage floor.

>> Did higher wages reduce local employment since it made labor more expensive for landowners + firms to hire?

- Yet the earlier work also established that most (86%) of the earnings gains of NREGA participants came from non-program earnings.
- Here carry out a more systematic examination of local economic effects of improving NREGA program payments and efficiency using a wider range of data.

(3) Labor market effects (Muralidharan et al 2023)

- Central finding: a wide range of local measures of economic activity increase in the sub-districts with enhanced NREGA implementations, including non-NREGA earnings, wages, days worked (in the private sector), and **increases in local enterprises and employment** across all non-agricultural sectors

TABLE V

NON-AGRICULTURAL ENTERPRISES AND EMPLOYEES.

	All Sectors	Livestock	Manufacturing and Construction	Wholesale and Retail	Other
	(1)	(2)	(3)	(4)	(5)
Panel A: Number of employees					
Adjusted TE	3307	294	909	836	1268
$(\beta_T + 0.36 * \beta_N)$	(1554)	(246)	(465)	(554)	(616)
	[0.089]	[0.19]	[0.13]	[0.15]	[0.12]
Main effect	2251	113	588	764	786
(β_T)	(1101)	(212)	(313)	(398)	(435)
	[0.1]	[0.33]	[0.14]	[0.1]	[0.17]
Nbhd effect	1056	182	320	71	483
$(0.36 * \beta_N)$	(826)	(191)	(280)	(317)	(339)
	[0.2]	[0.16]	[0.22]	[0.41]	[0.2]
Control mean	6796.7	1711.5	1439.9	1219.2	2426.1
Adjusted R^2	0.165	0.518	0.164	0.115	0.122
Observations	157	157	157	157	157
Panel B: Number of enterprises					
Adjusted TE	1095	177	167	327	423
$(\beta_T + 0.36 * \beta_N)$	(575)	(134)	(176)	(227)	(214)
	[0.085]	[0.18]	[0.28]	[0.13]	[0.093]
Main effect	856	62	221	311	262
(β_T)	(427)	(126)	(141)	(165)	(163)
	[0.078]	[0.32]	[0.14]	[0.074]	[0.14]
Nbhd effect	239	115	−54	16	162
$(0.36 * \beta_N)$	(311)	(108)	(115)	(126)	(120)
	[0.27]	[0.14]	[0.58]	[0.43]	[0.17]
Control mean	3816.5	1127.3	754.1	739.3	1195.7
Adjusted R^2	0.285	0.579	0.211	0.163	0.245
Observations	157	157	157	157	157

Note: The unit of analysis is a mandal. Outcomes are the number of employees (Panel A) and number of firms (Panel B) reported in the respective categories in the Economic Census. Standard errors in parentheses are heteroscedasticity-robust. p-values from randomization inference on 10,000 iterations are reported in square brackets.

(3) Labor market effects (Muralidharan et al 2023)

- Central finding: a wide range of local measures of economic activity increase in the sub-districts with enhanced NREGA implementations, including non-NREGA earnings, wages, days worked (in the private sector), and **increases in local enterprises and employment** across all non-agricultural sectors

- Echoing Egger et al (2022), no meaningful increase in local consumer good prices
- But not everyone gained: large landowners appear to "lose" as farm earnings per acre drop (presumably due to higher wages), suggesting **redistribution to workers**

TABLE III

PRICES.

	Consumer Goods			Prices and Rates of Return	
	(1) Index: Uniform Goods	(2) Index: All Goods	(3) Individual Goods	(4) Logged Own-Land Profits	(5) Logged Value per Acre
Adjusted TE ($\beta_T + 0.36 * \beta_N$)	−0.055	0.0059	−0.0003	−0.19	−0.06
	(0.13)	(0.045)	(0.016)	(0.08)	(0.13)
	{0.13}	{0.051}	{0.015}	{0.076}	{0.15}
Main effect (β_T)	−0.0072	0.0072	−0.0071	−0.09	−0.061
	(0.079)	(0.029)	(0.011)	(0.075)	(0.11)
	{0.082}	{0.032}	{0.011}	{0.065}	{0.11}
Nbhd effect ($0.36 * \beta_N$)	−0.048	−0.0014	0.0068	−0.1	0.0018
	(0.057)	(0.019)	(0.0073)	(0.042)	(0.053)
	{0.059}	{0.023}	{0.0075}	{0.042}	{0.059}
Item FE	No	No	Yes	No	No
Unit of analysis	Village	Village	Item × Household	Household	Household
Control mean	11.1	10.7	−3.1	10.0	11.7
Adjusted R^2	0.982	0.998	0.951	0.261	0.173
Observations	58	58	17,651	2487	3053

Note: The outcome in Columns 1 and 2 is the log of the village-level price indices constructed using Equation (3); Column 1 restricts the sample to goods purchased at least once in every village. The outcome in Column 3 is the log of the individual commodity price. "Own-land profits" is the log of the household's income from their owned land. "Value per acre" is the log value per acre of a household's landholdings. Estimation is as described in Section 2.3. Appendices J and G discuss recall and sensitivity to outliers in more detail. Standard errors in parentheses are clustered by mandal; those in brackets are spatial as in Conley (2008).

(3) Labor market effects (Muralidharan et al 2023)

- Two plausible interpretations (not mutually exclusive):

1. Monopsonistic local labor markets: higher wages could theoretically lead to more hiring in this case, plausibly given limited large landowners + high transport costs

>> Consistent with this, largest local employment effects in areas with higher land ownership concentration

2. Local multipliers: the expansion of NREGA spending increased earnings for poor workers (high MPCs), and the resulting aggregate demand shock generated multipliers

>> Consistent with patterns in Egger et al (2022), Gerard et al (2024), including the muted consumer price effects

Thank you!

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