# Do cash transfers foster resilience? Evidence from rural Niger

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Section 1

# Motivation

# CASH TRANSFERS

- We have learned a lot about cash transfers
  - A. Positive impacts on consumption, education, health & nutrition (Fiszbein and Schady, 2009; Beegle et al., 2018)
  - B. With or without conditions (Baird et al., 2014)
  - C. Positive spillover effects on non-beneficiaries (Angelucci & De Giorgi, 2009)
  - D. Impacts on productive investments (Gertler et al., 2020; Stoeffler et al., 2019)
- To some extent, still a "black box", especially UCTs
  - Mechanisms? Household priorities? Alleviates credit constraint and/or risk constraint? (Karlan et al., 2014; de Mel et al., 2008)
  - Design & targeting of shock-responsive transfers?
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# CASH TRANSFER & RESILIENCE

- *Resilience*: new fad (Béné et al., 2014)? Increasing attention from policy makers and academia.
- Ability to cope with and recover from shocks (Constas & Barrett, 2014)
- Current attention but decades of research on risk & shock as major constraint
- Cash transfer & resilience: important link
  - Rationale for cash transfers: promoting by protecting (Grosh et al. 2008)
  - Increasingly used as response to Covid-19 economic impacts
  - Scarcity of evidence (Marcous et al,. 2012; Asfaw et al., 2017)
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1. Are cash transfers raising consumption for *very* poor rural households?
2. Are beneficiaries of cash transfers able to mitigate the effect of *covariate*, climatic shocks?
3. What are the mechanisms which foster resilience (e.g. *productive* investments, as a result or a factor of increased resilience)?

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Section 2

# CONTEXT & PROGRAM

# CONTEXT: RURAL NIGER

- Niger is one of the poorest countries in the world
  - Ranked last in HDI in 2018; rural poverty rate over 50% and per capita income of $420
  - Sahel: prone to recurrent droughts & other shocks (incl. insecurity); climate change makes it worst
  - 80% rural, agriculture is 36.5% of the GDP; landlocked

- Program in poor rural areas of Dosso & Maradi

# THE CASH TRANSFER PROGRAM

- The Niger safety nets project
  - Flagship anti-poverty program
  - About 80,000 households per phase (about 1 million individuals); expanding
  - Still limited coverage & need for evidence
  - Impact at scale; comparison with pilot (Stoefflet et al., 2019)
- UCT: US $20/month for 24 months per household
  - 10-20% of household consumption
  - Predictable and delivered consistently: a social safety net
- Selection of poor households by Proxy Means Testing (PMT)
  - PMT survey to all households, only in program area
  - On average, 40% of households selected

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Section 3

# Data & Estimation strategy

# DATA & RESEARCH DESIGN

- Randomized evaluation at the village level
- Two rounds of household data (impact evaluation survey):
  1. Baseline in 2012 (pre-intervention)
  2. Endline in 2015 (post-intervention); low attrition
- 4,330 households in 244 villages
  - 2,861 households in treatment villages
  - 1,131 recipients of CT (beneficiaries)... i.e. only 40% of the treatment group
- Compare treatment & control but PMT survey only in treatment
  - Construct a simulated-PMT score from the baseline survey
  - Unfortunately, this proxy-PMT score (from baseline) did *not* reproduce the PMT score (from PMT survey) in treatment areas
  - We will match beneficiaries to non-beneficiaries (right *counter-factual*): quasi-experimental methods

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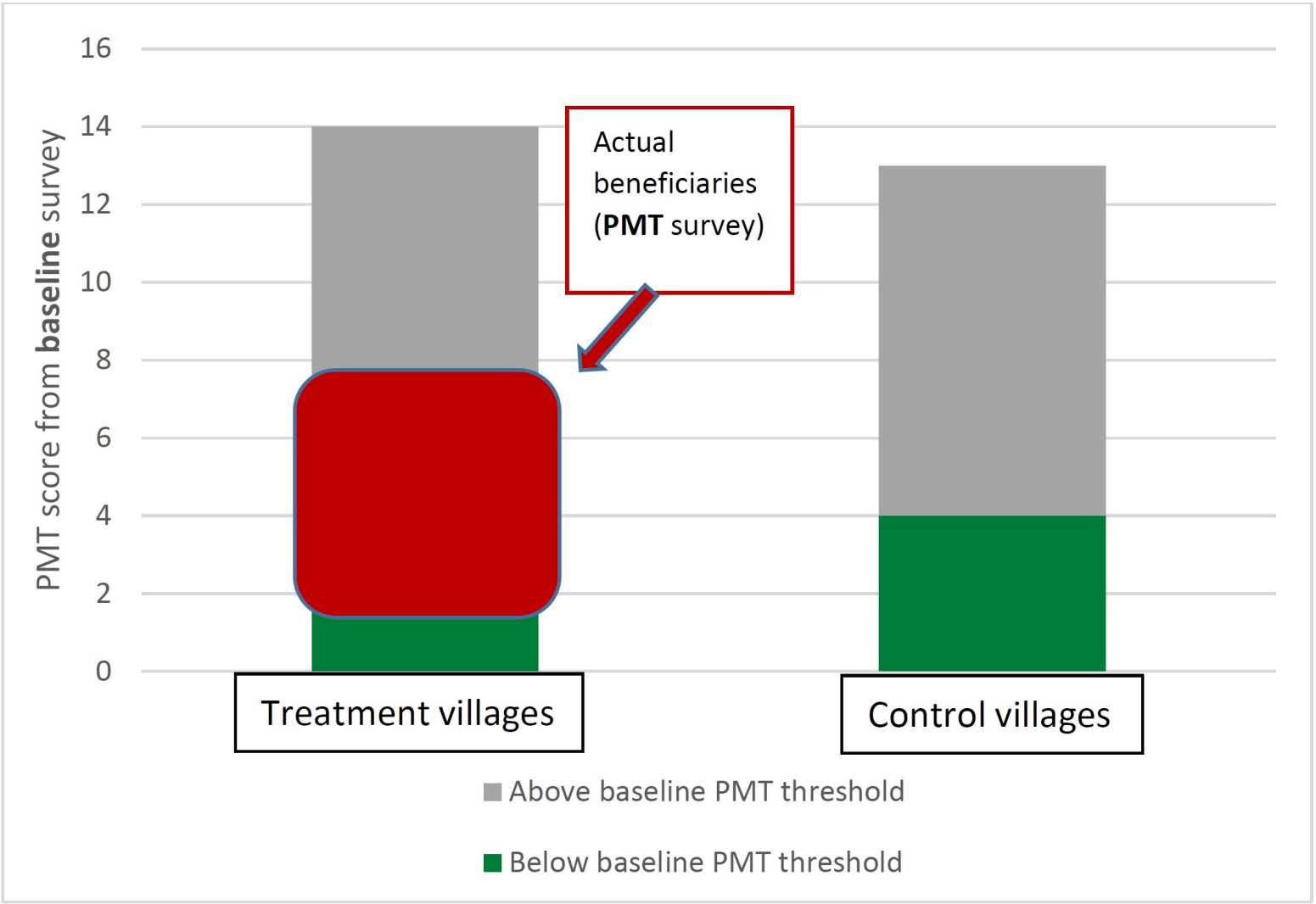

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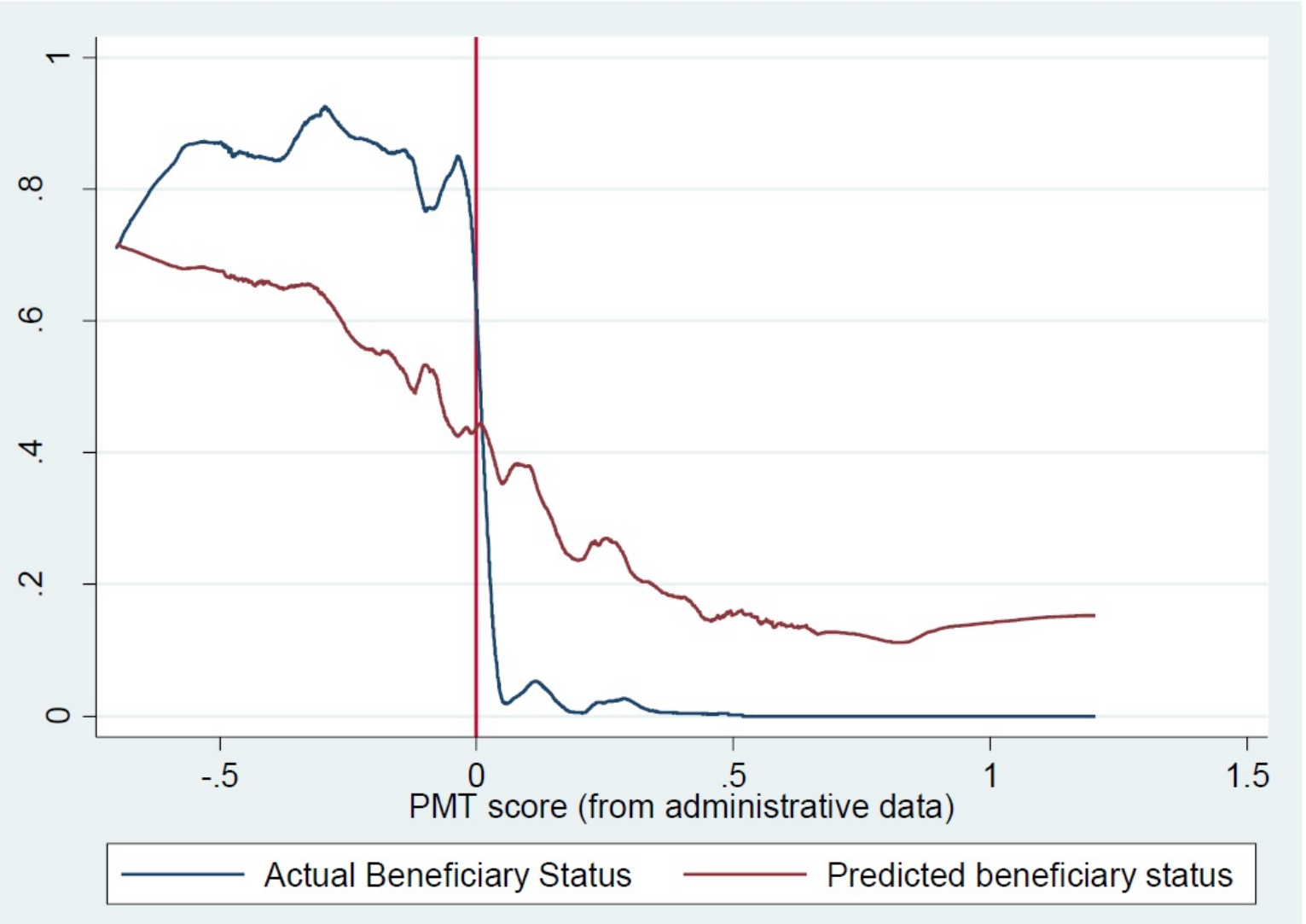

# SATELLITE DATA FOR EXOGENOUS SHOCKS

- To measure impacts *resilience* we look at the heterogeneity of impacts on households affected by shocks.
- The survey includes self-reported shocks; main shock: drought (29% of households). But shocks are not exogenous.
- We used historical data satellite data (from AFDM)
  - Constructed weekly averages for 2011-2015
  - Can identify normalized deviation from historical average (1970-2010)
- We define a "drought" indicator
  - Use rainfall deviation during the critical period (planting season, June 2014). Focus on the 20th percentile
  - Correlates well with millet / sorghum production; consumption per capita; and self-declared drought

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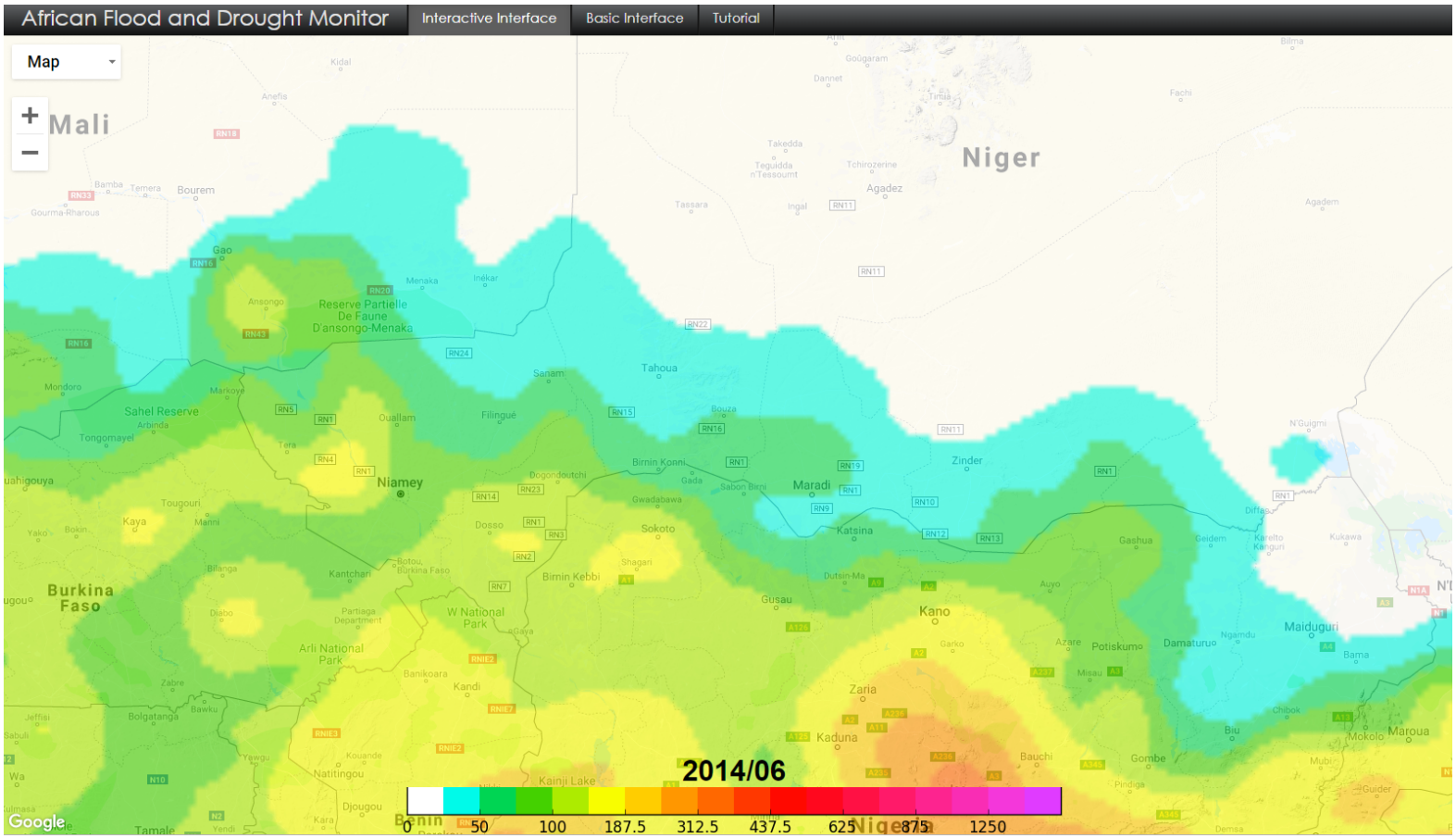

# SPECIFICATION

- For all variables of interest: **Difference in difference (DID)**
- Few variables only in endline: single difference (SD)
- Randomization strata FE & cluster s.e. at village level
- Average impacts:
  1. **Below-PMT threshold**: comparing households in treatment and control groups *with baseline simulated-PMT scores below the PMT cut-off* (ITT)
  2. **Matched-DID**: comparing beneficiary households (in treatment group) to matched non-beneficiary households (in control group)
- Resilience:
  1. Same as matched-DID but **interacting treatment with shock**

$$y_{FD,i,v} = \beta_0 + \beta_1 T_{i,v} + \beta_2 S_v + \beta_3 T_{i,v} * S_v + \epsilon_i \quad (1)$$

  2. **Cissé & Barrett (2018) methodology** (likelihood that a household will remain over a well-being threshold)

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# Section 4

## RESULTS

# BALANCE TABLES

| | (1) Control group | (2) Treatment group | (3) T-test p-value | (4) Predicted beneficiary, Control | (5) Predicted beneficiary, Treatment | (6) T-test p-value |
|---|---|---|---|---|---|---|
| Household Size | 8.35 | 8.61 | 1.16 | 10.2 | 10.2 | -0.26 |
| Nomadic community | 0.092 | 0.15 | 1.27 | 0.10 | 0.12 | 0.43 |
| Number of years of education | 0.55 | 0.36 | -2.62*** | 0.41 | 0.30 | -1.28 |
| Low quality dwelling walls (stone, wood, straw) | 0.11 | 0.12 | 0.23 | 0.13 | 0.14 | 0.16 |
| Metal roof | 0.052 | 0.054 | 0.16 | 0.045 | 0.040 | -0.32 |
| Household head has a handicap | 0.032 | 0.024 | -1.45 | 0.052 | 0.038 | -1.19 |
| Number of shocks last year (self-declared) | 2.37 | 2.40 | 0.36 | 2.35 | 2.39 | 0.44 |
| Consumption per capita (CFA/pyear) | 121062.9 | 114413.0 | -1.47 | 96928.1 | 93352.0 | -0.89 |
| Food consumption score (0-112, 0 = low) | 50.3 | 49.2 | -0.63 | 48.4 | 46.0 | -1.25 |
| A household member participates in a tontine | 0.12 | 0.12 | 0.051 | 0.10 | 0.11 | 0.39 |
| Tontine last deposit (CFA) | 115.8 | 105.1 | -0.17 | 52.3 | 113.1 | 1.85* |
| Log value of durables | 10.9 | 10.8 | -0.76 | 10.7 | 10.6 | -0.97 |
| Has a household enterprise | 0.68 | 0.66 | -1.00 | 0.66 | 0.64 | -0.79 |
| Number of household enterprises | 0.94 | 0.90 | -0.95 | 0.92 | 0.88 | -0.62 |
| Household owns a bovine | 0.50 | 0.51 | 0.15 | 0.46 | 0.42 | -1.04 |
| Household owns a sheep or goat | 0.88 | 0.87 | -1.03 | 0.85 | 0.83 | -0.93 |
| Household owns poultry | 0.57 | 0.61 | 1.61 | 0.50 | 0.56 | 1.73* |
| TLU (99%) | 1.58 | 1.68 | 0.67 | 1.44 | 1.30 | -0.83 |
| Cultivates land | 0.99 | 0.99 | -1.24 | 0.99 | 0.99 | -0.41 |
| Land area cultivated (ha) | 3.75 | 3.86 | 0.55 | 3.60 | 4.01 | 1.53 |
| Number of fields | 2.48 | 2.42 | -0.72 | 2.42 | 2.44 | 0.27 |
| Area rented (ha) | 0.17 | 0.13 | -1.24 | 0.091 | 0.13 | 1.25 |
| Area rented out (ha) | 0.11 | 0.094 | -0.55 | 0.063 | 0.092 | 1.01 |
| Built something against erosion | 0.11 | 0.099 | -0.49 | 0.10 | 0.11 | 0.39 |
| Observations | 1266 | 2537 | 3803 | 560 | 1122 | 1682 |

Test of balance: group comparisons, full sample (columns 1-3) and below the (baseline) PMT threshold sample (columns 4-6). Standard errors are clustered at the village level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

# CONSUMPTION & FS: MATCHING

| | (1) Consumption per capita (CFA/year) | (2) Log consumption per capita | (3) Food consumption per capita | (4) Non-food consumption per capita | (5) Household poverty gap | (6) Food consumption score | (7) Moderate or severe food insecurity |
|---|---|---|---|---|---|---|---|
| CT beneficiary, 2015 | 8366.6** | 0.0945** | 5538.5* | 2480.5* | -0.0428** | 3.308 | -0.0651 |
| | (2.03) | (2.10) | (1.80) | (1.78) | (-2.05) | (1.60) | (-1.53) |
| Observations | 2192 | 2192 | 2192 | 2192 | 2192 | 2192 | 2192 |
| Mean in control | 81975.000 | 11.314 | 60980.113 | 17767.279 | 0.456 | 41.500 | 0.000 |
| Median in control | 92855.320 | 11.289 | 69436.243 | 22721.272 | 0.418 | 42.423 | 0.408 |

*t* statistics in parentheses
Estimation of a model of propensity score matching combined with difference-in-difference. Beneficiaries of the cash transfer program are matched to households in control villages based on PMT variables. Randomization strata fixed-effects are included (stratification based on commune and nomadic status). Standard errors are clustered at the village level.
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# CONSUMPTION & FS: RESILIENCE (EXOGENOUS SHOCK)

| | (1) Consumption per capita (CFA/year) | (2) Log consumption per capita | (3) Food consumption per capita | (4) Non-food consumption per capita | (5) Poverty gap | (6) Food consumption score | (7) Moderate or severe food insecurity |
|---|---|---|---|---|---|---|---|
| Cash Transfers (CT), 2015 | 4913.7 | 0.0495 | 2673.6 | 1871.1 | -0.0211 | 1.909 | -0.0352 |
| | (1.05) | (0.99) | (0.77) | (1.16) | (-0.90) | (0.86) | (-0.71) |
| Drought in 2014 (p20) (shock) | -20756.8** | -0.242** | -14283.3** | -6243.6** | 0.115** | -11.84*** | 0.192* |
| | (-2.32) | (-2.52) | (-2.11) | (-2.13) | (2.58) | (-2.62) | (1.86) |
| Cash Transfers, 2015 * drought in 2014 (p20) | 14092.0 | 0.187* | 12097.4* | 2131.4 | -0.0906** | 5.345 | -0.122 |
| | (1.62) | (1.91) | (1.95) | (0.65) | (-1.98) | (0.98) | (-1.12) |
| Observations | 2192 | 2192 | 2192 | 2192 | 2192 | 2192 | 2192 |
| Mean in control | 92855.320 | 11.289 | 69436.243 | 22721.272 | 0.418 | 42.423 | 0.408 |
| Median in control | 81975.000 | 11.314 | 60980.113 | 17767.279 | 0.456 | 41.500 | 0.000 |
| CT+CT*shock=0 | 0.013 | 0.008 | 0.007 | 0.158 | 0.006 | 0.141 | 0.093 |
| shock+CT*shock=0 | 0.432 | 0.555 | 0.703 | 0.158 | 0.578 | 0.166 | 0.443 |

*t* statistics in parentheses

Estimation of a matched difference-in-differences model. Beneficiaries of the cash transfer program are matched to households in control villages based on PMT variables. Shocks are defined as rainfall in June 2014 below the 20th percentile of the historical average. The last two rows of the table show the p value of a Wald tests for the sum of the coefficients in the 1st and 2nd row, respectively 2nd and 3rd row. Randomization strata fixed-effects are included (stratification based on commune and nomadic status). Standard errors are clustered at the village level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

# MECHANISMS: SAVING IN ROSCAS

| | (1) HH participates in tontine | (2) Number tontine (6 max) | (3) Tontine last deposit (CFA) | (4) Tontine last amount received (CFA, 99p) |
|---|---|---|---|---|
| Cash Transfers (CT), 2015 | 0.166*** | 0.156*** | 276.1*** | 1903.3*** |
| | (4.60) | (3.26) | (4.17) | (2.94) |
| Drought in 2014 (p20) (shock) | -0.0544 | -0.0973 | 5.934 | -552.4 |
| | (-1.05) | (-1.35) | (0.08) | (-0.63) |
| Cash Transfers, 2015 * drought in 2014 (p20) | -0.0585 | -0.0915 | -86.15 | -784.1 |
| | (-0.76) | (-0.81) | (-0.65) | (-0.45) |
| Observations | 2190 | 2192 | 2192 | 2192 |
| Mean in control | 0.206 | 0.271 | 153.009 | 1399.068 |
| Median in control | 0.000 | 0.000 | 0.000 | 0.000 |
| CT+CT*shock=0 | 0.132 | 0.549 | 0.100 | 0.505 |
| shock+CT*shock=0 | 0.170 | 0.107 | 0.553 | 0.474 |

# MECHANISMS: INVESTMENT IN AGRICULTURE

| | (1) Fields with fertilizer (#) | (2) Millet / sorghum area (ha) | (3) Millet / sorghum yields (kg/ha) | (4) Sold part of harvest | (5) Value of harvest sold (CFA) |
|---|---|---|---|---|---|
| Village received cash | -0.0222 | 0.0711 | -2.722 | -0.00878 | -1274.2 |
| | (-0.41) | (0.31) | (-0.22) | (-0.23) | (-0.28) |
| Drought in 2014 (p20) | -0.0844 | 0.312 | -34.40 | -0.237*** | -26419.7*** |
| | (-0.93) | (1.07) | (-1.65) | (-3.61) | (-4.02) |
| Village received cash, 2015 when drought in 2014 (p20) | 0.157* | -0.0104 | 7.503 | 0.134* | 15287.2** |
| | (1.90) | (-0.03) | (0.32) | (1.75) | (2.32) |
| Observations | 1682 | 1682 | 1682 | 1682 | 1682 |
| Mean in control | 0.37 | 3.08 | 222.46 | 0.47 | 26679.29 |
| Median in control | 0 | 3 | 190 | 0 | 0 |
| CT+CT*shock=0 | 0.028 | 0.829 | 0.809 | 0.067 | 0.005 |
| shock+CT*shock=0 | 0.448 | 0.294 | 0.155 | 0.169 | 0.167 |

# MECHANISMS: INVESTMENT IN SMALL ENTERPRISES

| | (1) Has a household enterprise | (2) Number of household enterprises | (3) Has a HHE related to processing agricultural products | (4) Has a HHE (other types) |
|---|---|---|---|---|
| Cash Transfers (CT), 2015 | -0.00590 | -0.0572 | -0.00738 | -0.0210 |
| | (-0.17) | (-0.97) | (-0.25) | (-0.52) |
| Drought in 2014 (p20) (shock) | -0.198*** | -0.368*** | -0.274*** | -0.0721 |
| | (-2.92) | (-3.33) | (-5.97) | (-0.95) |
| Cash Transfers, 2015 * drought in 2014 (p20) | 0.148* | 0.297** | 0.232*** | 0.0592 |
| | (1.87) | (2.13) | (3.94) | (0.63) |
| Observations | 2192 | 2192 | 2192 | 2192 |
| Mean in control | 0.554 | 0.727 | 0.271 | 0.401 |
| Median in control | 1.000 | 1.000 | 0.000 | 0.000 |
| CT+CT*shock=0 | 0.048 | 0.063 | 0.000 | 0.657 |
| shock+CT*shock=0 | 0.430 | 0.551 | 0.446 | 0.858 |

# MECHANISMS: INVESTMENT IN SMALL ENTERPRISES

| | (1) Yearly profits, all HHE (CFA, 99p) | (2) Profits in last month active, all HHE (CFA, 99p) | (3) Log value HHE equipment (CFA) | (4) HHE financed by agriculture | (5) HH financed by saving | (6) HHE financed by loan | (7) HHE financed by tontine |
|---|---|---|---|---|---|---|---|
| Village received cash | -23962.3 | -1892.2 | -0.220 | -0.0451 | 0.0118 | -0.0259 | -0.00488 |
| | (-1.08) | (-0.70) | (-0.79) | (-1.53) | (0.73) | (-1.12) | (-0.77) |
| Drought in 2014 (p20) | -51062.9* | -7493.1** | 0.0818 | -0.101* | 0.0897** | -0.0120 | -0.0137 |
| | (-1.97) | (-2.15) | (0.12) | (-1.96) | (2.54) | (-0.25) | (-1.49) |
| Village received cash, 2015 when drought in 2014 (p20) | 61214.2** | 7452.7** | 0.579 | 0.147** | -0.0797** | 0.0646 | 0.0290* |
| | (2.17) | (2.15) | (0.90) | (2.50) | (-2.05) | (1.27) | (1.89) |
| Observations | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 | 1682 |
| Mean in control | 121927.86 | 15087.32 | 3.55 | 0.30 | 0.10 | 0.12 | 0.01 |
| Median in control | 18000 | 4000 | 0 | 0 | 0 | 0 | 0 |
| CT+CT*shock=0 | 0.037 | 0.009 | 0.528 | 0.042 | 0.060 | 0.388 | 0.060 |
| shock+CT*shock=0 | 0.705 | 0.990 | 0.230 | 0.374 | 0.779 | 0.301 | 0.438 |

# MECHANISMS: INVESTMENT IN LIVESTOCK

| | (1) Household owns a bovine | (2) Household owns a sheep or goat | (3) Household owns poultry | (4) TLU (99%) |
|---|---|---|---|---|
| Cash Transfers, 2015 | 0.0226 | 0.0560*** | -0.108*** | 0.0237 |
| | (0.70) | (2.90) | (-2.88) | (0.22) |
| Drought in 2014 (p20) | -0.0211 | 0.0211 | -0.00743 | -0.0274 |
| | (-0.29) | (0.56) | (-0.10) | (-0.21) |
| Cash Transfers, 2015 * drought in 2014 (p20) | -0.0883 | -0.00341 | 0.198** | -0.0262 |
| | (-1.20) | (-0.09) | (2.28) | (-0.15) |
| Observations | 2192 | 2192 | 2192 | 2157 |
| Mean in control | 0.509 | 0.885 | 0.583 | 1.508 |
| Median in control | 1.000 | 1.000 | 1.000 | 1.000 |
| CT+CT*shock=0 | 0.325 | 0.110 | 0.253 | 0.984 |
| shock+CT*shock=0 | 0.071 | 0.676 | 0.012 | 0.720 |

# CONCLUSION

## FINDINGS

- Evidence from a large, scaled-up cash transfer program in one of the poorest settings
- The transfer increased consumption and resilience
- Investments in assets & livelihoods drive the increased ability to cope with shocks

## POLICY IMPLICATIONS

- CTs can be an instrument of *promotion* through *protection*
- Improvements focused on households affected by shocks...
- ... however mechanisms suggest that multi-year, pre-existing social safety nets are necessary
- Important for design of shock-responsive transfers

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# THANK YOU FOR YOUR ATTENTION!

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