Reshaping Institutions: Evidence on Aid Impacts Using a Pre-analysis Plan

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Motivation

- Many scholars agree that institutions are important determinants of economic development. However, there is limited consensus on exactly what the "right" institutions are, and even less evidence on how to "improve" existing institutions in poor countries.

- Foreign aid is a highly relevant context for studying these issues, **particularly in post-conflict environments** where there has been massive disruption to institutions, and there may be a window of opportunity for reform.

- Is it possible (and is it even desirable?) for foreign aid donors to promote institutional change in post-conflict countries?

Motivation (2)

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  - Relatively large sample (236 villages, 2,832 households), and extended time frame (2005 to 2009).
  - We develop new, objective institutional performance measures, and employ a pre-analysis plan to eliminate data mining.

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Motivation (3)

"*Experience demonstrates that by directly relying on poor people to drive development activities, CDD [community driven development] has the potential to make poverty reduction efforts more responsive to demands, more inclusive, more sustainable, and more cost-effective than traditional centrally led programs…achieving immediate and lasting results at the grassroots level.*" – Dongier et al. (2003), World Bank

Why might Sierra Leone's institutions warrant reform?

- **Legacy of bad governance and corruption in the formal system**
  - President Siaka Stevens abolished local government (1972) and banned rival political parties (1978), abysmal public services
- **The traditional system is (also) dominated by elder male elites**
  - 149 Paramount Chiefs rule for life; come from hereditary ruling houses; and control land, labor and the judiciary outside the capital
  - Women are not even eligible for chieftaincy in most of the country

- Scholars point to seeds of the 1991-2002 civil war in social divisions, inequalities, and lack of political representation.

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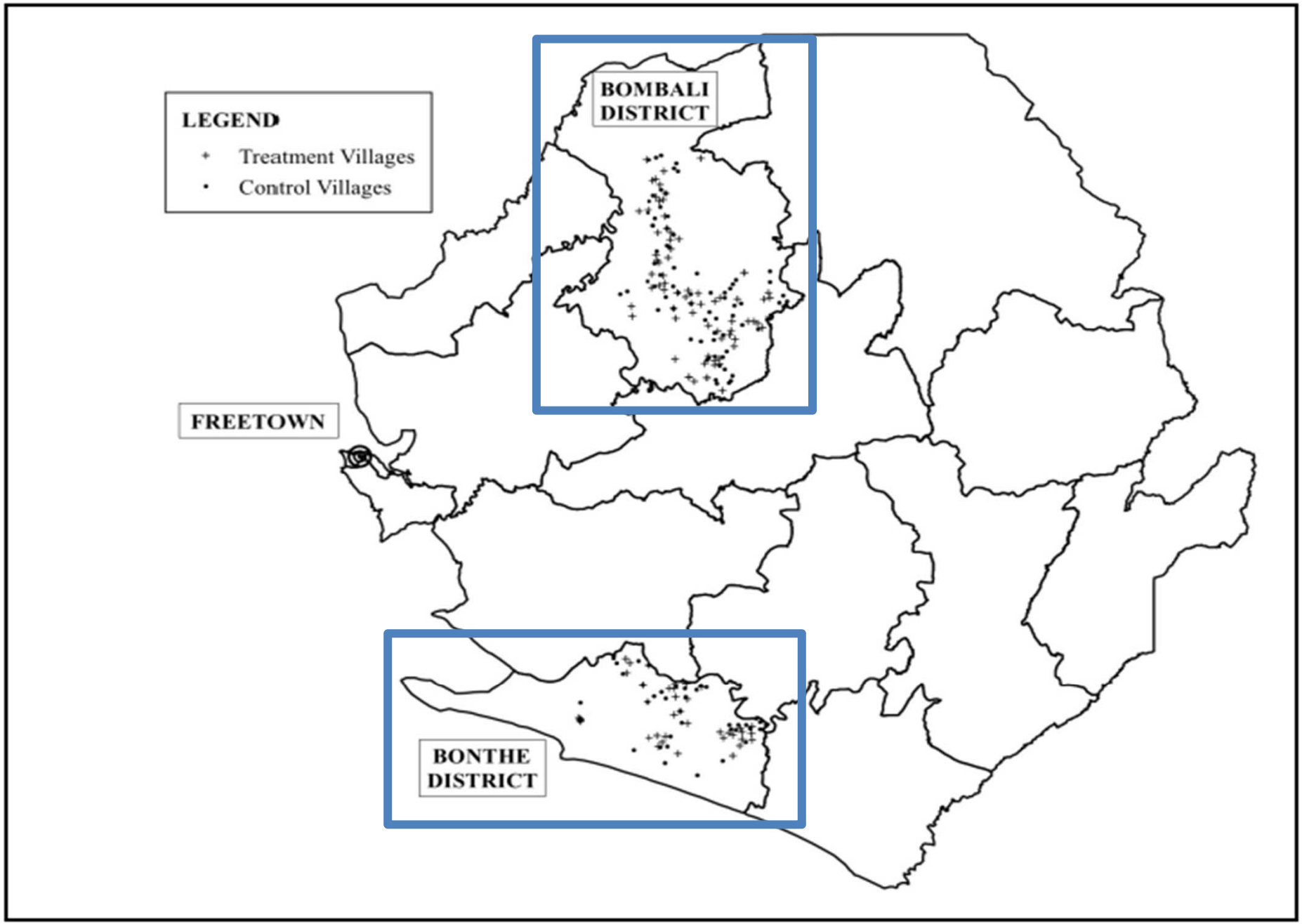
- **Training and facilitation** to build durable local collective action capacity (6 months of intensive contact spread out over 4 years)
  - Forms a representative Village Development Committee to promote democratic decision-making
  - Establishes bank accounts and transparent accounting procedures
- Requirements to **increase participation of marginalized** groups
  - Women were co-signatories on the community bank accounts
  - Women and youths managed own projects, e.g. labor groups

Appendix D: Location of Research Communities



Local public goods construction projects

- The distribution of community projects by sector was:
  - Infrastructure (43%) - e.g., community centers, primary schools
  - Agriculture/livestock (40%) - e.g., seed multiplication, goats
  - Skills training, small business (17%) - e.g., carpentry, soap-making

Overview of results

- **Outcome family A: The project was well-implemented, with strong impacts on "hardware" and economic activity**
  - Village-level structures and tools to manage development projects were established (e.g. bank accounts)
  - Finances were disbursed with little leakage (<13% discrepancies)
  - Increases in the stock and quality of local public goods
  - Increases in household assets and village-level market activity

Table 3: Family A: Illustrative Selection of Statistically Significant Treatment Effects

Outcome variable	Mean in Controls	Treatment Effect	Standard Error	N
	(1)	(2)	(3)	(4)
Panel B: Hypothesis 2 - Local Public Goods				
Functional traditional midwife post in the community	0.079	0.172**	(0.035)	235
Functional latrine in the community	0.462	0.208**	(0.059)	234
Functional community center in the community	0.212	0.156**	(0.047)	236
Community took a proposal to an NGO or donor for funding	0.292	-0.152**	(0.052)	229
Supervisor's physical assessment of construction quality (index from 0 to 1):				
Primary School	0.583	0.106+	(0.056)	123
Grain drying floor	0.375	0.158*	(0.076)	101
Latrine	0.270	0.176**	(0.054)	154
Panel C: Hypothesis 3 - Economic Welfare				
Total petty traders in village	2.432	0.704*	(0.344)	225
Total goods on sale of 10	4.449	0.566*	(0.240)	236
Household asset score	-0.170	0.310**	(0.092)	236
Attended trade skills training	0.061	0.120**	(0.018)	235

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  - Increases in household assets and village-level market activity
- **Outcome family B: Zero impact on "software" / "institutions"**
  - No impacts on participation in decision-making
  - No sustained increase in collective action capacity
  - No change in the "voice" of women and young men
  - Apparent "capture" of new organizations by chiefly authorities
  - Example of communal farms: established but low participation

Methodological issues

- **Measuring institutional performance** is challenging:
  - Subjective measures are prone to “halo effects”.
  - Institutions are multi-faceted, leaving open the risk of data mining or “cherry-picking” of results consistent with prior beliefs.

- Combines survey data with three **"structured community activities"** (SCAs) that unobtrusively observe communities post-program.
- Follows a **pre-analysis plan** to limit data mining.

Data collection

- Household surveys, field supervisor direct observations, and village focus group discussions.
- A novel component - structured community activities (SCAs):
  - **Matching grant:** communities received six vouchers that could be redeemed with a co-pay at a local building materials store (max value $300). A direct measure of collective action capacity.
  - **Communal choice:** communities were presented with two equally valued assets (batteries vs. salt) and enumerators observed ensuing deliberations, recording the number of male/female and youth/elder speakers as measures of participation and influence.
  - **Managing an asset:** communities were given a large tarpaulin, use as an agricultural drying floor or roofing material. Focus on elite capture in a surprise follow-up visit 5 months later.

Structured Community Activity (SCA) Outcome:	Mean for Controls	Treatment Effect	Standard Error
	(1)	(2)	(3)
Panel A. Collective Action and the Building Materials Vouchers			
GoBifo Mean Effect for SCA #1 (13 outcomes in total)	**0.00**	**-0.06**	**(0.05)**
Proportion of communities that redeemed vouchers at building materials store	0.54	-0.01	(0.06)
Average number of vouchers redeemed at the store (out of six)	2.95	0.11	(0.35)
Proportion of communities that held a meeting to discuss the vouchers	0.98	-0.05*	(0.02)
Panel B. Participation in the Gift Choice Deliberation			
GoBifo Mean Effect for SCA #2 (32 outcomes in total)	**0.00**	**0.01**	**(0.04)**
Duration of gift choice deliberation (in minutes)	9.36	1.60	(1.13)
Total adults in attendance at gift choice meeting	54.51	3.50	(3.20)
Total women in attendance at gift choice meeting	24.99	1.99	(1.68)
Total youths (approximately 18-35 years) in attendance at gift choice meeting	23.57	2.10	(1.38)
Total number of public speakers during the deliberation	6.04	0.24	(0.40)
Total number of women who spoke publicly during the deliberation	1.88	-0.19	(0.22)
Total number of youths (approximately 18-35 years) who spoke publicly	2.14	0.23	(0.24)
Proportion of communities that held a vote during the deliberation	0.10	0.07	(0.04)

Pre-analysis plan (PAP): Motivation

- Tying the researcher's hands with a pre-analysis plan limits selective presentation ("cherry-picking") of results (Leamer 1974, 1983), and produces **appropriately sized statistical tests**.

- Even experimental research affords considerable discretion over: **outcome measures**; grouping outcomes into hypothesis families; subgroup analysis (e.g., by demographic group); covariate choice; etc.

- For the broader community, registering pre-analysis plans in a public archive can also limit **publication bias**. (Planned AEA registry.)

PAP: Timing and Hypotheses

- In October 2005 (before the program), the research and project teams together agreed to a **hypothesis document** about GoBifo impacts.
- Before analyzing endline data, we submitted a **pre-analysis plan** with outcome measures and explanatory variables for each hypothesis, and econometric specifications.

- Defining hypotheses in advance prevents us from selecting outcomes that tell a great "story", and shields us from potential pressure to report only results that support donor and policymaker agendas.

PAP: Accounting for Many Outcomes

- Given the large number of outcomes needed to measure institutions, it is particularly important to **account for multiple inference**
  - Project impacts are determined by the **mean treatment effect** across all outcomes under a given hypothesis (Kling et al 2007).
  - Adjustments for multiple testing across pre-specified hypotheses using Westfall-Young (1993) family wise error rate (**FWER**)
  - Re-weight to account for closely related measures (Anderson 2008)
  - Results for all 318 pre-specified outcomes individually

PAP: Flexibility with Transparency

- The key question is **how much researcher discretion**. We argue against a "purist" approach with no discretion. Limited flexibility can be desirable but comes with the "price tag" of **full transparency**.

- We describe all **deviations** from our PAP. E.g., adding a 12th hypothesis (on project implementation) to remedy a clear oversight.
  - "Purists" are free to consider only the original 11 hypotheses

- GoBifo data has been shared with funders (3ie), and our PAP is **publicly available** online (www.povertyactionlab.org/Hypothesis-Registry).

Table 2: GoBifo Treatment Effects by Research Hypothesis

Hypotheses by family	GoBifo Mean Treatment Effect Index	Naïve p-value	FWER adjusted p-value for all 12 hypos	FWER adjusted p-value for 11 hypos in 2009 PAP
	(1)	(2)	(3)	(4)
Family A: Development Infrastructure or "Hardware" Effects				
Mean Effect for Family A (Hypotheses 1, 2 and 3; 37 total outcomes)	**0.373****			
	(0.032)	**0.000**		
H1: GoBifo creates functional development committees (7 outcomes)	0.702**			
	(0.055)	0.000	0.000	
H2: Participation in GoBifo improves the quality of local public services infrastructure (16 outcomes)	0.192**			
	(0.041)	0.000	0.000	0.000
H3: Participation in GoBifo improves general economic welfare (14 outcomes)	0.414**			
	(0.047)	0.000	0.000	0.000

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Family B: Institutional and Social Change or "Software" Effects				
Mean Effect for Family B (Hypotheses 4, 5, 6, 7, 8, 9, 10, 11 and 12; 146 total outcomes)	**0.031**			
	(0.020)	**0.126**		
H4: Participation in GoBifo increases collective action and contributions to local public goods (15 outcomes)	0.012			
	(0.037)	0.738	0.994	0.995
H5: GoBifo increases inclusion and participation in community planning and implementation, especially for poor and vulnerable groups; GoBifo norms spill over into other types of community decisions, making them more inclusive, transparent and accountable (43 outcomes)	-0.002			
	(0.033)	0.952	0.994	0.995
H6: GoBifo changes local systems of authority, including the roles and public perception of traditional leaders (chiefs) versus elected local government (25 outcomes)	0.053			
	(0.038)	0.163	0.734	0.728
H7: Participation in GoBifo increases trust (11 outcomes)	0.039			
	(0.046)	0.395	0.946	0.946
H8: Participation in GoBifo builds and strengthens community groups and networks (12 outcomes)	0.036			
	(0.043)	0.400	0.946	0.946

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H9: Participation in GoBifo increases access to information about local governance (19 outcomes)	0.012			
	(0.036)	0.732	0.994	0.995
H10: GoBifo increases public participation in local governance (15 outcomes)	0.122**			
	(0.044)	0.006	0.051	0.050
H11: By increasing trust, GoBifo reduces crime and conflict in the community (8 outcomes)	0.010			
	(0.043)	0.816	0.994	0.995
H12: GoBifo changes political and social attitudes, making individuals more liberal towards women, more accepting of other ethnic groups and "strangers", and less tolerant of corruption and violence (9 outcomes)	0.041			
	(0.043)	0.348	0.944	0.942

Illustrating the risk of "cherry-picking"

- Given our large number of outcome measures (318 in all), it is possible to selectively present one subset of outcomes for which CDD had a "positive" impact on institutions, and a second subset of outcomes that show the opposite impact.

- Illustrates some of the value of having a pre-analysis plan in place, **to limit tendentious reporting**.

Table 5: Erroneous Interpretations under "Cherry Picking"

Survey question	Mean for controls	Treatment effect	Standard error	N	Hypo
	(1)	(2)	(3)	(4)	(5)
Panel A: Institutions "Deteriorated"					
Attended meeting to decide what to do with the tarp	0.812	-0.037+	(0.021)	236	H5
Everybody had equal say in deciding how to use the tarp	0.509	-0.106+	(0.058)	232	H5
Correctly able to name what the tarp was used for	0.589	-0.08+	(0.048)	236	H9
Community used the tarp (verified by physical assessment)	0.897	-0.079+	(0.044)	233	H4
Community can show research team the tarp	0.836	-0.116*	(0.051)	232	H5
Respondent would like to be a member of the VDC	0.361	-0.043*	(0.021)	236	H10
Current (or acting) village chief/Headman is younger than 35	0.044	-0.038+	(0.023)	229	H12
Respondent voted in the local government election (2008)	0.851	-0.036*	(0.016)	236	H10
Panel B: Institutions "Improved"					
Community teachers have been trained	0.471	0.122+	(0.066)	173	H4
Respondent is a member of a women's group	0.235	0.060**	(0.021)	236	H8
Someone took minutes at the most recent community meeting	0.295	0.140*	(0.063)	227	H5
Building materials stored in a public place when not in use	0.128	0.246*	(0.098)	84	H5
Chiefdom official did not have the most influence over tarpaulin use	0.543	0.058*	(0.029)	236	H6
Respondent agrees with "Responsible young people can be good leaders" and not "Only older people are mature enough to be leaders"	0.762	0.038*	(0.017)	236	H6, H12
Correctly able to name the Section Chief for this section	0.533	0.053+	(0.032)	234	H9
Correctly able to name the year of the next general elections	0.192	0.038*	(0.018)	236	H9

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Conclusion

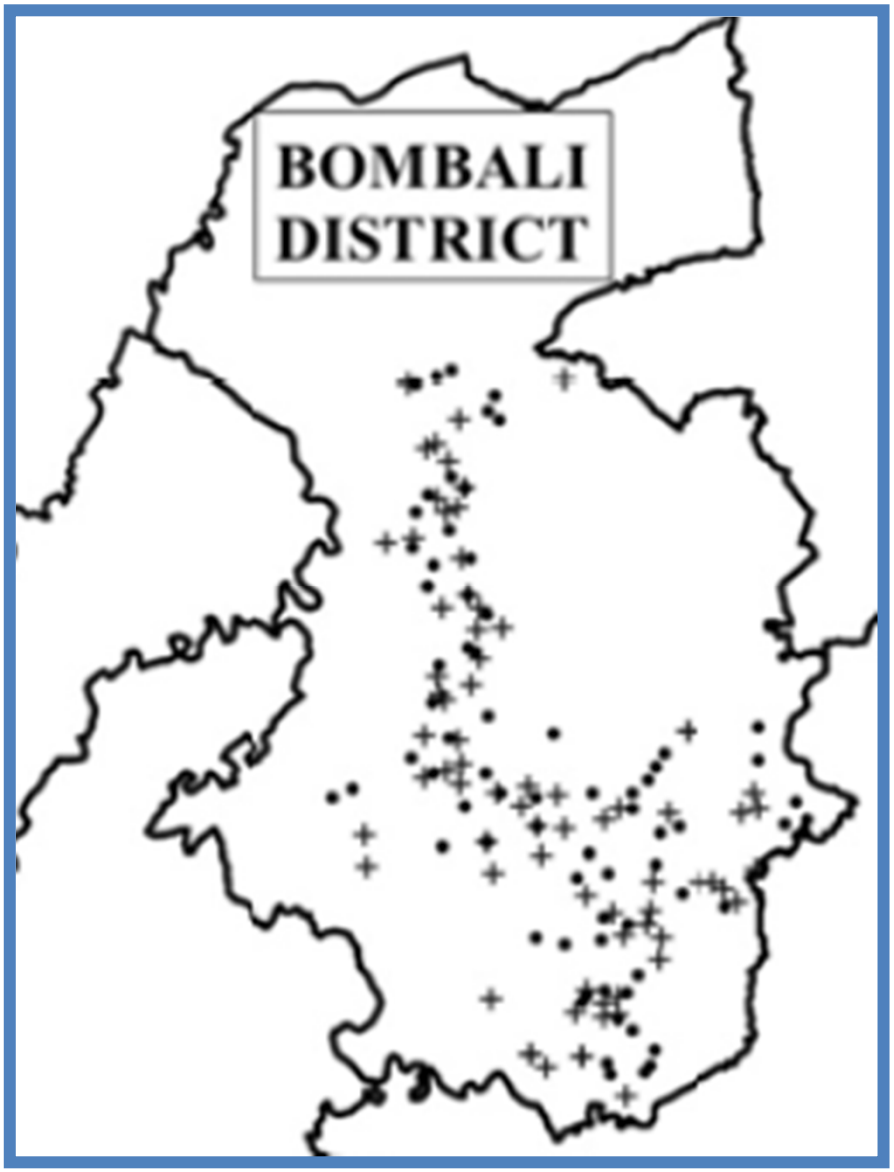
- The project was a reasonable mechanism for delivering local public goods in Sierra Leone, **yet did not lead to lasting changes** in local collective action, village institutions, gender inclusion, social norms.
- The comparative advantage of the World Bank and similar external donors may lie more in **building** development hardware than in **instigating sustainable social change**.

- Setting up new organizations may be insufficient to promote social change since they can be co-opted by elites – here, the chiefs.
- Giving marginalized groups **formal authority** (i.e. Beaman et al 2009 on quotas for women in politics in India) may be more effective than indirect interventions like CDD that hope to shift social norms, especially when existing authorities are strong.

END – EXTRA SLIDES

Other evidence on CDD impacts

- **Fearon, Humphreys and Weinstein (2009), Liberia:** No improvement in real-world public goods, material welfare, or meeting attendance in N=83 villages. Higher public goods game contributions in one arm (mixed-gender), plus survey reports of reduced inter-group tension. No funding of small business projects, and no economic impacts.
- **Beath, Christia and Enikolopov (2011), Afghanistan:** Limited impacts on the performance of local institutions and social capital, but some positive impacts on economic well-being, attitudes toward government, and security.
- **Olken (2007), Indonesia:** Top-down audits were more effective in reducing corruption in road projects than grassroots participation.
- **Labonne and Chase (2008), Philippines:** Increased community participation but did not trigger broader social change and may crowd out other activities.
- **Voss (2008), Indonesia:** Mixed impacts on household welfare and access to services: the poor gained, not female headed households.
- Bjorkman and Svensson (2009), Uganda; Banerjee et al. (2010), India.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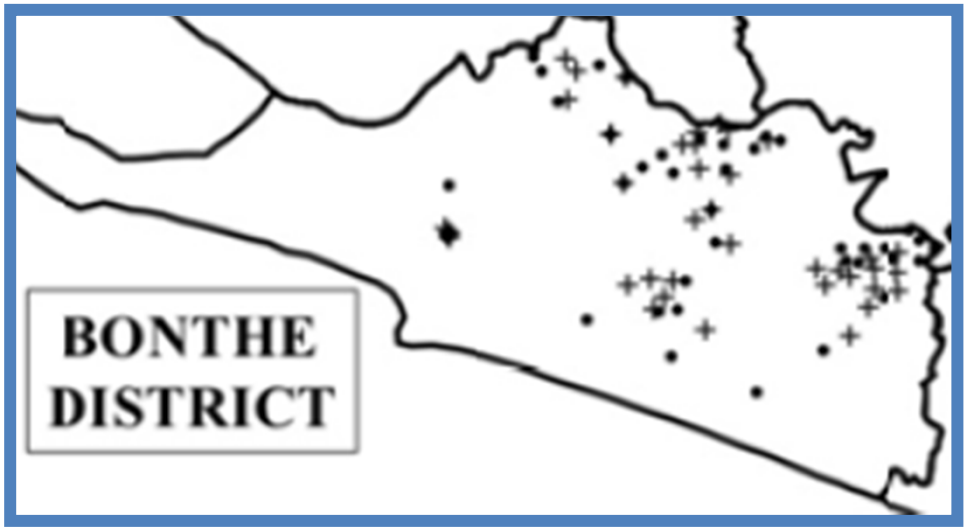
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Appendix B: Project and Research Timeline

10-Oct-05	*Hypothesis document drafted*
Nov-05	Baseline Survey
Dec-05	
Jan-06	Ward Facilitator Training
Feb-06	
Mar-06	
Apr-06	
May-06	Development Planning
Jun-06	
Jul-06	
Aug-06	
Sep-06	
Oct-06	
Nov-06	
Dec-06	
Jan-07	Ward Development Committee Approval
Feb-07	
Mar-07	
Apr-07	Delays
May-07	
Jun-07	
Jul-07	
Aug-07	
Sep-07	
Nov-07	
Dec-07	
Jan-08	Projects implemented
Feb-08	
Mar-08	
Apr-08	Second grants disbursed
May-08	
Jun-08	Projects implemented
Jul-08	
Aug-08	
Sep-08	Third grants disbursed
Oct-08	
Nov-08	Projects implemented
Dec-08	
Jan-09	
Feb-09	
Mar-09	
Apr-09	
May-09	Follow-up survey 1
Jun-09	Voucher program begins
Jul-09	
21-Aug-09	*Pre-Analysis Plan archived with the Jameel Poverty Action Lab*
Sep-09	Voucher program ends
Oct-09	Follow-up survey 2
Nov-09	
4-Mar-10	*Plan Supplement covering second follow-up survey archived*

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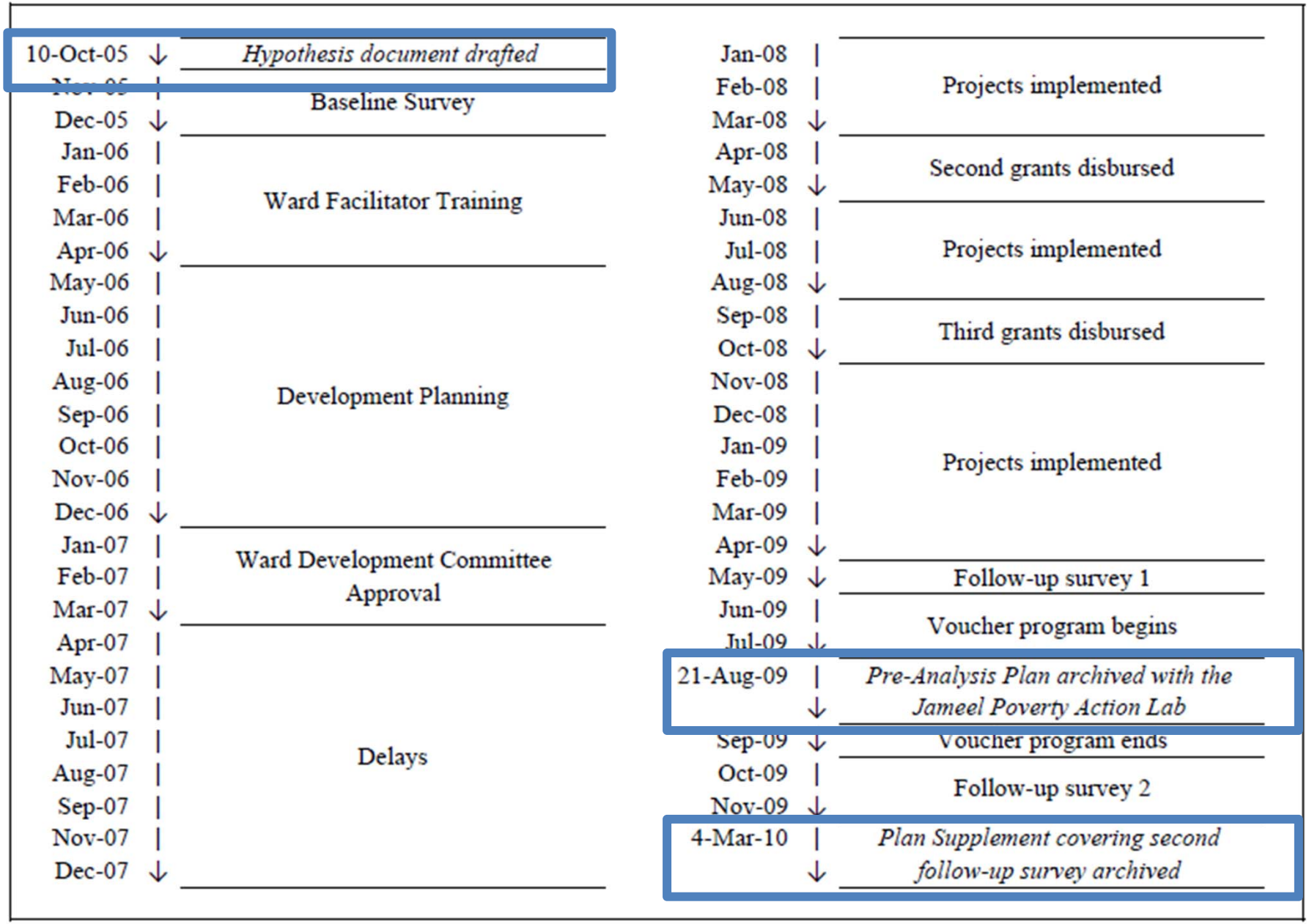

Econometric specifications

- Basic model for outcomes with post-program data only:

$$\mathbf{Y_c = \beta_0 + \beta_1 T_c + X_c'\Gamma + W_c'\Pi + \varepsilon_c}$$

  - Y_c is outcome in community c (HH data averaged by village)
  - T_c is an indicator for GoBifo treatment
  - X_c is a vector of community-level controls (pre-specified, results are robust to their exclusion); W_c are ward fixed effects
  - ε_c is an idiosyncratic error term

- Results unchanged with panel specification (where data available)

- **FWER** p-value adjustments to account for multiple testing, for both groups of outcomes and particular outcomes (appendix). Contrast with usual "naïve" or "per comparison" p-values.

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	(0.043)	0.348	0.944	0.942

Appendix H: Robustness Checks for Table 2

Hypotheses by family	Base specification (Table 2, Column 1, Katz et al 2007)	Covariance weighting in Index (Anderson 2008)	SUR approach to Index (Kling and Liebman 2004)	Include panel data	Include full set of controls	Drop attriters
	(1)	(2)	(3)	(4)	(5)	(6)
Family A: Development Infrastructure or "Hardware" Effects						
H1: GoBifo creates functional development committees	0.702**	0.922**	0.700**	0.688**	0.695**	0.706**
	(0.055)	(0.056)	(0.052)	(0.063)	(0.055)	(0.056)
H2: GoBifo increases the quality and quantity of local public services infrastructure	0.192**	0.179**	0.191**	0.159**	0.193**	0.193**
	(0.041)	(0.041)	(0.042)	(0.040)	(0.041)	(0.041)
H3: GoBifo improves general economic welfare	0.414**	0.656**	0.409**	0.399**	0.401**	0.414**
	(0.047)	(0.050)	(0.046)	(0.046)	(0.045)	(0.048)
Family B: Institutional and Social Change or "Software" Effects						
H4: GoBifo increases collective action and contributions to local public goods	0.012	-0.043	0.016	0.038	0.011	0.014
	(0.037)	(0.036)	(0.036)	(0.042)	(0.036)	(0.037)
H5: GoBifo enhances inclusion and participation in community decisions, especially for vulnerable groups	-0.002	-0.003	-0.002	-0.001	-0.005	0.000
	(0.033)	(0.028)	(0.032)	(0.031)	(0.033)	(0.033)
H6: GoBifo changes local systems of authority	0.053	0.049	0.051	0.046	0.049	0.037
	(0.038)	(0.031)	(0.036)	(0.037)	(0.037)	(0.037)
H7: GoBifo enhances trust	0.039	0.038	0.039	0.044	0.033	0.042
	(0.046)	(0.047)	(0.044)	(0.064)	(0.046)	(0.046)
H8: GoBifo builds groups and networks	0.036	0.019	0.036	0.033	0.034	0.061
	(0.043)	(0.042)	(0.041)	(0.044)	(0.043)	(0.043)
H9: GoBifo increases access to information about local governance	0.012	0.002	0.011	0.003	0.006	0.013
	(0.036)	(0.038)	(0.034)	(0.039)	(0.035)	(0.036)
H10: GoBifo increases participation in local governance	0.122**	0.139**	0.124**	0.114*	0.114**	0.123**
	(0.044)	(0.045)	(0.042)	(0.047)	(0.043)	0.045
H11: GoBifo reduces crime and conflict	0.010	0.041	0.010	0.027	0.014	-0.013
	(0.043)	(0.048)	(0.041)	(0.054)	(0.043)	(0.042)
H12: GoBifo fosters more liberal political and social attitudes	0.041	-0.011	0.040	0.040	0.035	-0.011
	(0.043)	(0.044)	(0.041)	(0.041)	(0.044)	(0.046)

Table 4: Structured Community Activities (SCAs): Illustrative Treatment Effects

Structured Community Activity (SCA) Outcome:	Mean for Controls	Treatment Effect	Standard Error
	(1)	(2)	(3)
Panel A. Collective Action and the Building Materials Vouchers			
GoBifo Mean Effect for SCA #1 (13 outcomes in total)	**0.000**	**-0.063**	**(0.054)**
Proportion of communities that redeemed vouchers at building materials store	0.54	-0.015	(0.060)
Average number of vouchers redeemed at the store (out of six)	2.95	0.060	(0.351)
Proportion of communities that held a meeting to discuss the vouchers	0.98	-0.052*	(0.023)
Panel B. Participation in the Gift Choice Deliberation			
GoBifo Mean Effect for SCA #2 (32 outcomes in total)	**0.000**	**0.004**	**(0.036)**
Duration of gift choice deliberation (in minutes)	9.36	1.544	(1.117)
Total adults in attendance at gift choice meeting	54.51	3.570	(2.876)
Total women in attendance at gift choice meeting	24.99	1.982	(1.590)
Total youths (approximately 18-35 years) in attendance at gift choice meeting	23.57	2.061	(1.321)
Total number of public speakers during the deliberation	6.04	0.223	(0.399)
Total number of women who spoke publicly during the deliberation	1.88	-0.195	(0.217)
Total number of youths (approximately 18-35 years) who spoke publicly	2.14	0.231	(0.237)
Proportion of communities that held a vote during the deliberation	0.10	0.069	(0.042)
Panel C. Community Use of the Tarpaulin			
GoBifo Mean Effect for SCA #3 (18 outcomes in total)	**0.000**	**-0.038**	**(0.046)**
Proportion of communities that held a meeting to discuss use of the tarp	0.98	-0.025	(0.020)
Proportion of communities that stored the tarp in a public place	0.06	0.054	(0.037)
Proportion of communities that had used the tarp (5 months after receipt)	0.90	-0.079+	(0.044)
Given tarp used, proportion of communities using the tarp in a public way	0.86	0.015	(0.051)

Robustness checks

- **Were there threats to the research design?**
  - Complete compliance with treatment group assignment
  - Baseline balance on observables across T/C groups
  - Minimal household attrition (4%), moderate for individuals (24%), but balanced across T/C and no interactions with characteristics
- **Did control communities benefit from Gobifo?**
  - GoBifo operated at the ward level as well, so targeting was possible. However, treatment households were, if anything, slightly more likely to report benefits from ward projects (not significant).
- **Are our measures too blunt to detect subtle changes?**
  - Large and diverse number of outcomes for each hypothesis, 318 in all. Consistent results across different data collection methods: HH surveys, direct observation, focus group discussions, and SCAs.