The Impact of NGO-Provided Aid on Government Capacity: Evidence from Uganda

Erika Deserranno, Aisha Nansamba, and Nancy Qian

March 14, 2024

NGO-Delivered Foreign Aid

- Amount of aid delivered by NGOs has quadrupled in the past 20 years (Werker & Ahmed 2008; Aldashev & Navarra 2018)
  - OECD countries deliver 42 billion dollars per year through NGOs (OECD 2021)
- Main source of basic community services for poor communities in sub-Saharan African countries
- Rise in the importance of NGOs is accompanied by a rise in scrutiny and criticism

Concerns over NGOs

NGOs can crowd-out government capacity:

- Reduce recipient government public capacity (Moyo and Ferguson 2009)
- Compete with the government over scarce resources (Easterly 2003)
  - offer higher wages and poach skilled government workers ("local brain drain")
  - pay 10x local wages for high-skilled jobs (doctors, judges, experienced teachers), 4x for low-skilled jobs (guards, cleaning staff) (Koch and Schulpen 2018)

"Local Brain Drain"

- "NGOs too often create a local brain drain by luring nurses, doctors, and other professionals from the public hospitals to "NGO land," where salaries are better." (Farmer 2008)
- "This internal 'brain drain' has had a more severe impact on the local health system than has the more widely recognized international migration of health workers." (Kassaye (2006), The Lancet)
- Doctors and public health experts are asking for an "NGO Code of Conduct," where the proposed items include *"Limit hiring of public officials", "Limit pay inequity", "Commit to joint planning [with recipient government]."* (Pfeiffer et al. 2008)
- Project "Fairness in Aid Remuneration" works with international NGOs (e.g., Save the Children, WaterAid) to reduce pay gap
  - hard because these international NGOs often compress wages across countries (Hjort et al. 2019)

Positive Spillovers from NGOs

NGOs can crowd-in government capacity:

- NGOs' health services can increase community awareness of the value of health treatments (Gopalan et al. 2012, Alam et al. 2012)
- Can increase supply of individuals willing to work as a government health worker (El Arifeen et al. 2013)
- Can increase the demand for government health services (Zafar Ullah et al. 2006)
- Presence of NGO worker may "motivate" government worker

Research Question

- Does NGO entry crowd out or crowd in government services?
- If there is crowd out, is the poaching of government workers an important underlying mechanism?

This Paper

- Exploits randomized entry of one of the world's largest and most reputable NGOs in 127 villages of rural Uganda
- In each village, NGO hires a "community health worker" to provide basic health services
- Half of the villages had a pre-existing government worker who provides similar services at a lower pay

This Paper

- Estimates effects of NGO entry on (i) the labor supply of health workers and (ii) healthcare coverage
- Studies the impact of NGO entry in villages with and without a pre-existing gov worker
  - In villages with a pre-existing gov worker, the NGO can crowd out or crowd in gov services
    - Higher wages attract gov workers: $\downarrow$ # gov workers
    - NGO educates villagers about the value of basic health services: $\uparrow$ # gov workers
  - In villages without a pre-existing gov worker, the NGO can only crowd in gov services
- Tests the role of skilled labor supply in assessing NGOs

Related Literature

- Large empirical literature about aid efficacy (e.g., Svensson 1999, Nunn and Qian 2014)
- Baldwin et al. (2019) and Cruzatti et al. (2020) show that African governments allocate financial resources away from regions that receive NGO aid
- We shed light on another mechanism through which aid can crowd out gov services, i.e., by poaching gov workers when skilled labor supply is limited
- Literature on effects of community health programs (Bjorkman Nyqvist et al. 2019, 2022)

Context and Data

Rural Uganda

Little access to medical care

- Government hospitals/health centers $\rightarrow$ far
- Private clinics $\rightarrow$ expensive
- Traditional healer $\rightarrow$ not effective

Government Program

- "Village Health Teams" program established in 2001, rolled out in 2009
- Local health workers who provide free basic health services during home visits in their community
  - health education, pre- and post-natal check ups, basic medical advice, referrals to health clinics in urban areas
  - free basic medicines (e.g., ACT, ORS, antibiotics)
- All workers given basic training and uniform
- Unpaid volunteers motivated by altruism/career incentives, who work $\sim$10 hours per week (Mays 2017)
  - Standard in community-based programs

Government Program

- Government aimed to select a worker in all villages
  - Only half of the villages had a gov worker one year after universal rollout (2010)
  - Main constraint is labor supply: finding a person who is able and willing
  - Government did not expand program after initial rollout (limited gov capacity)

NGO Program

- One of the largest in the world, with same goals as the government
- NGO workers receive similar basic training and provide similar health services free of charge
- + earn an income by selling health commodities (soap, fortified oil, toothpaste) at piece rate
  - Average earnings = urban (entry level) nurse salary

NGO Program

- Program rolled out randomly in 127 rural villages of North and Central Uganda in 2010, one year after gov roll out
  - 66 treatment villages, 61 control
- NGO successfully hired a worker in every village it enters
- Tried to avoid hiring gov workers but hard to screen them out + look for same skills as gov workers
  - poaching occurs especially when skilled labor is scarce
  - gov did not rehire where poaching occurs and did not hire new workers elsewhere (limited gov capacity, no centralized data on its own operations or on NGO presence)

Data

- Village and household-level data collected in 2010 (before NGO rollout but after gov roll out) and in 2012
  - Village data on presence of health providers: N = 127
  - Household data on access to health services and health outcomes: N = 2,747 (random 10%)

Summary Statistics

Sample of villages:	All		All	Gov in 2010	No Gov in 2010	All	All
	Mean	SD	NGO	NGO	NGO	Gov in 2010	Scarcity of Skilled Labor
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Presence of a Health Care Provider in 2010							
Observations (# villages)	127		127	73	54	127	127
Government health worker in the village = {0, 1}	0.575	0.496	-0.085	-	-	-	0.497***
			(0.072)	-	-	-	(0.129)
Traditional healer in the village = {0, 1}	0.480	0.502	-0.016	0.069	-0.031	-0.027	-0.063
			(0.088)	(0.129)	(0.134)	(0.125)	(0.204)
Drug store in the village = {0, 1}	0.677	0.469	0.030	0.076	0.000	-0.023	0.000
			(0.039)	(0.071)	(0.000)	(0.044)	(0.000)
Government clinic within 10 km of the village = {0, 1}	0.559	0.498	-0.052	-0.022	-0.003	-0.054	-0.366***
			(0.078)	(0.118)	(0.108)	(0.108)	(0.136)
Private clinic within 10km of the village = {0, 1}	0.835	0.373	0.047	0.127*	-0.019	0.006	0.012
			(0.045)	(0.073)	(0.057)	(0.047)	(0.016)
B. Village Size, Infant Mortality and Socio-Economic Background in 2010							
Observations (# villages)	127		127	73	54	127	127
Number of households in the village	182.1	125.5	-13.339	17.600	-77.696**	-45.290	-98.562**
			(22.191)	(18.330)	(44.669)	(29.111)	(43.229)
Number of infants per household	0.291	0.091	-0.004	-0.026	0.009	-0.024	-0.015
			(0.014)	(0.022)	(0.019)	(0.019)	(0.022)
Number of infants who died in the past year per household	0.041	0.060	-0.004	-0.005	-0.008	-0.007	0.003
			(0.009)	(0.016)	(0.006)	(0.006)	(0.005)
% households involved in farming	0.568	0.383	0.031	0.016	0.059	0.025	0.182***
			(0.023)	(0.036)	(0.036)	(0.027)	(0.049)
% household heads who completed primary education	0.376	0.260	0.004	0.057	-0.033	-0.016	-0.071
			(0.030)	(0.047)	(0.042)	(0.035)	(0.068)
Standardized index of wealth	0.000	0.927	0.027	0.088	-0.015	-0.006	-0.230**
			(0.053)	(0.063)	(0.099)	(0.070)	(0.108)
C. Medical Care in 2010							
Observations (# households)	3,745		3,745	2,131	1,614	3,745	3,745
Received medical care from a government health worker in the past year = {0, 1}	0.037	0.189	-0.008	-0.015	0.001	0.004	0.004
			(0.006)	(0.010)	(0.008)	(0.005)	(0.006)
Received medical care from a traditional healer in the past year = {0, 1}	0.024	0.154	-0.002	-0.001	0.004	0.005	-0.009
			(0.005)	(0.008)	(0.006)	(0.005)	(0.011)
Received medical care from a drug store in the past year = {0, 1}	0.151	0.358	-0.002	-0.016	0.003	-0.017	-0.032
			(0.019)	(0.016)	(0.037)	(0.025)	(0.047)
Received medical care from a government clinic in the past year = {0, 1}	0.251	0.434	-0.016	-0.034	0.022	0.009	0.091***
			(0.021)	(0.033)	(0.029)	(0.027)	(0.030)
Received medical care from a private clinic in the past year = {0, 1}	0.391	0.488	-0.013	-0.023	0.010	-0.035	-0.061
			(0.020)	(0.024)	(0.030)	(0.030)	(0.037)
Child health behavior index	0.000	0.627	-0.023	-0.042	-0.018	-0.006	-0.065
			(0.030)	(0.048)	(0.045)	(0.035)	(0.051)

Notes: Observations in Panels A-B are at the village level, and those in Panel C are at the household level. Sample restrictions are stated in the column headings. Cols. (1)-(2) state the sample mean and standard deviation of the variable named in the row heading. Cols. (3)-(7) show the estimates from regressions of the row variable on NGO entry

Self-reported Data from NGO Workers

	Mean	SD
	(1)	(2)
Observations (# NGO health workers)	66	
A. Socio-Economic Background		
Number of hours worked for the NGO	13.106	8.891
Earnings from NGO work in the past month (in thousand UGX)	51.710	66.911
Age	33.576	10.133
Completed primary education = {0, 1}	0.667	0.475
Completed secondary education = {0, 1}	0.242	0.432
Married = {0, 1}	0.833	0.376
B. Poaching		
Was working as a government health worker = {0, 1}	0.212	0.412
..among villages with a government health worker in 2010	0.389	0.494
..among villages with a government health worker in 2010 and none in 2012	0.824	0.393

Notes: Observations are at the NGO health worker level. Villages restricted to those with NGO entry. Each row states the sample mean and standard deviation of a variable.

- Earning of $1.46 per hour = 51% of Uganda weekly HH income. Urban (entry level) nurses earn $1.34 per hour.
- 82% of the villages lost their gov workers because they shifted to NGO

Results

Empirical Strategy

$$y_{hi} = \alpha + \beta(NGO_i \times Gov_i) + \gamma(NGO_i \times No\ Gov_i) + \delta Gov_i + \eta X_i + \lambda_a + \varepsilon_{hi}$$

- y_{hi} = provision of government health services to household h in village i in 2012
- $NGO_i = 1$ if the village is assigned to NGO in 2010
- $Gov_i = 1$ if the village has gov worker in 2010
- λ_a = area fixed effects
- ε_{hi} clustered at village level

Empirical Strategy

$$y_{hi} = \alpha + \beta(NGO_i \times Gov_i) + \gamma(NGO_i \times No\ Gov_i) + \delta Gov_i + \eta X_i + \lambda_a + \varepsilon_{hi}$$

- y_{hi} = provision of government health services to household h in village i in 2012
- $NGO_i = 1$ if the village is assigned to NGO in 2010
- $Gov_i = 1$ if the village has gov worker in 2010
- λ_a = area fixed effects
- ε_{hi} clustered at village level
- β = net of crowding-in and crowding-out effects in villages with a gov worker at baseline
- γ = crowding-in effects in villages without a gov worker

Empirical Strategy

$$y_{hi} = \alpha + \beta(NGO_i \times Gov_i) + \gamma(NGO_i \times No\ Gov_i) + \delta Gov_i + \eta X_i + \lambda_a + \varepsilon_{hi}$$

- y_{hi} = provision of government health services to household h in village i in 2012
- $NGO_i = 1$ if the village is assigned to NGO in 2010
- $Gov_i = 1$ if the village has gov worker in 2010
- λ_a = area fixed effects
- ε_{hi} clustered at village level
- β = net of crowding-in and crowding-out effects in villages with a gov worker at baseline
- γ = crowding-in effects in villages without a gov worker
- Robustness: X_i includes all baseline variables interacted with NGO_i

Health Workers and Health Services

	Dependent Variable					
	(1)	(2)	(3)	(4)	(5)	(6)
	Presence of Health Workers in the Village in 2012			Household Received Medical Care from the Following in the Past Year (2012)		
	Gov = {0, 1}	NGO = {0, 1}	Total = {0, 1, 2}	Gov = {0, 1}	NGO = {0, 1}	Any = {0, 1}
Mean Dep.Var.	**0.425**	**0.504**	**0.929**	**0.313**	**0.235**	**0.457**
NGO × Gov in 2010	-0.470***	0.984***	0.514***	-0.262***	0.297***	-0.129***
	(0.092)	(0.023)	(0.093)	(0.062)	(0.033)	(0.048)
NGO × No Gov in 2010	-0.017	0.931***	0.914***	-0.017	0.300***	0.276***
	(0.031)	(0.060)	(0.070)	(0.023)	(0.045)	(0.048)
Gov in 2010	0.759***	-0.085	0.674***	0.420***	-0.112***	0.345***
	(0.085)	(0.058)	(0.108)	(0.050)	(0.038)	(0.059)
Constant	0.104**	0.051	0.155**	0.154***	0.147***	0.238***
	(0.049)	(0.038)	(0.064)	(0.026)	(0.031)	(0.039)
Observations	127	127	127	2,747	2,747	2,747
R-squared	0.747	0.949	0.791	0.422	0.197	0.273
Mean Dep.Var. if NGO = 0 & Gov = 0	0.000	0.000	0.000	0.053	0.051	0.099

Notes: Observations are at the village level in cols. (1)-(3) and at the household level in cols. (4)-(6). In parentheses, we present standard errors clustered at the village level for household-level regressions and robust standard errors for village-level regressions. All regressions include area fixed effects, and the following controls (measured in 2010 and de-meaned) and their interactions with government presence in 2010: private clinic within 10km and the number of households in the village. *** p<0.01, ** p<0.05, * p<0.1.

Mechanism Behind Poaching

- Test whether baseline local supply of skilled labor is a driver of poaching
  - NGO should have better success in finding a different person to employ when skilled labor is abundant
- We proxy abundant skilled labor with high share (top quartile) of public + private sector workers (non-farmers)

Mechanism: Skilled Labor Scarcity

	Dependent Variable					
	(1)	(2)	(3)	(4)	(5)	(6)
	Presence of Health Workers in the Village in 2012			Household Received Medical Care from the Following in the Past Year (2012)		
	Gov = {0, 1}	NGO = {0, 1}	Total = {0, 1, 2}	Gov = {0, 1}	NGO = {0, 1}	Any = {0, 1}
Mean Dep.Var.	**0.425**	**0.504**	**0.929**	**0.313**	**0.235**	**0.457**
NGO × Gov in 2010 × Scarcity of Skilled Labor	-0.554***	0.961***	0.407***	-0.315***	0.253***	-0.164***
	(0.091)	(0.045)	(0.100)	(0.053)	(0.027)	(0.046)
NGO × Gov in 2010 × Abundancy of Skilled Labor	0.173	1.048***	1.221***	0.358***	0.554***	0.326***
	(0.135)	(0.051)	(0.149)	(0.070)	(0.034)	(0.056)
NGO × No Gov in 2010	-0.056	0.948***	0.892***	-0.021	0.360***	0.310***
	(0.050)	(0.045)	(0.071)	(0.029)	(0.041)	(0.044)
Gov in 2010	0.787***	-0.058	0.729***	0.423***	-0.030	0.382***
	(0.098)	(0.041)	(0.110)	(0.054)	(0.036)	(0.064)
Constant	0.118***	0.033	0.151**	0.158***	0.086***	0.207***
	(0.054)	(0.027)	(0.065)	(0.028)	(0.028)	(0.036)
Observations	127	127	127	2,735	2,735	2,735
R-squared	0.770	0.953	0.816	0.449	0.217	0.291
H_0: NGO × Gov × Scarcity = NGO × Gov × Abund. (p-value)	<0.001	0.364	<0.001	<0.001	<0.001	<0.001

Notes: Observations are at the village level in cols. (1)-(3) and at the household level in cols. (4)-(6). In parentheses, we present standard errors clustered at the village level for household-level regressions and robust standard errors for village-level regressions. All regressions include area fixed effects and the following village-level controls (measured in 2010 and de-meaned) and their interactions with "NGO × Gov in 2010" and "NGO × No Gov in 2010": government clinic within 10km, private clinic within 10km, the number of households in the village, average standardized index of wealth. All household-level regressions additionally control for whether the household received medical care from a government clinic in the past year (measured in 2010 and de-meaned) and its interaction with "NGO × Gov in 2010" and "NGO × No Gov in 2010". We define a village to have abundant (resp., scarce) skilled labor supply if the share of public or private sector workers (non-farmers) is in the top quartile (resp., in the bottom three quartiles). *** p<0.01, ** p<0.05, * p<0.1.

Mechanism: Skilled Labor Scarcity

- Health coverage goes down when NGO enters a village with a pre-existing gov worker
- Lower coverage compensated by higher quantity or better quality of care?
- Examine health outcomes:
  - infant mortality
  - child health behavior (child sleeps under bednet, drinks treated water, washes hands, fully immunized)

Health Outcomes ▸ More

	Dependent Variable		
	(1)	(2)	(3)
	Infant Mortality (2010-12)		Child Health Behavior Index in 2012
	≥ 1 died = {0, 1}	Deaths/1,000 births	
Sample:	HHs with a birth since 2010	All villages	HHs with a child below age 5
Mean Dep.Var.	**0.073**	**65.004**	**0.045**
NGO × Gov in 2010	0.017	3.103	-0.065
	(0.024)	(21.389)	(0.055)
NGO × No Gov in 2010	-0.022	-30.124	0.035
	(0.019)	(20.085)	(0.039)
Gov in 2010	-0.031	-39.868*	0.100*
	(0.024)	(23.709)	(0.051)
Constant	0.093***	96.665***	0.013
	(0.019)	(17.063)	(0.034)
Observations	1,402	127	2,045
R-squared	0.030	0.232	0.156

Notes: Sample restrictions are stated in the column headings. Observations are at the household level in all columns except col. (2) in which they are at the village level. In parentheses, we present standard errors clustered at the village level for household-level regressions and robust standard errors for village-level regressions. All regressions include area fixed effects, and the following controls (measured in 2010 and de-meaned) and their interactions with government presence in 2010: private clinic within 10km and the number of households in the village. The child health behavior index is the average standardized effect of four variables: whether children are fully immunized, sleep under bednet, drink treated water, or wash hands before food and after toilet. *** p<0.01, ** p<0.05, * p<0.1.

Health Outcomes ▸ More

	Dependent Variable		
	(1)	(2)	(3)
	Infant Mortality (2010-12)		Child Health Behavior Index in 2012
	≥ 1 died = {0, 1}	Deaths/1,000 births	
Sample:	HHs with a birth since 2010	All villages	HHs with a child below age 5
Mean Dep.Var.	**0.073**	**65.004**	**0.045**
NGO × Gov in 2010 × Scarcity of Skilled Labor	0.027	12.338	-0.065
	(0.022)	(22.755)	(0.059)
NGO × Gov in 2010 × Abundancy of Skilled Labor	-0.018	-30.956	0.133**
	(0.024)	(23.215)	(0.064)
NGO × No Gov in 2010	-0.042*	-48.257**	0.065
	(0.021)	(24.034)	(0.042)
Gov in 2010	-0.051**	-56.826**	0.120*
	(0.025)	(26.273)	(0.060)
Constant	0.105***	103.493***	-0.019
	(0.017)	(17.955)	(0.039)
Observations	1,394	127	2,036
R-squared	0.039	0.288	0.168
H_0: NGO × Gov × Scarcity = NGO × Gov × Abund. (p-value)	0.155	0.147	0.017

Notes: Sample restrictions are stated in the column headings. Observations are at the household level in all columns except col. (2) in which they are at the village level. In parentheses, we present standard errors clustered at the village level for household-level regressions and robust standard errors for village-level regressions. All regressions include area fixed effects and the following village-level controls (measured in 2010 and de-meaned) and their interactions with "NGO × Gov in 2010" and "NGO × No Gov in 2010": government clinic within 10km, private clinic within 10km, the number of households in the village, average standardized index of wealth. All household-level regressions additionally control for whether the household received medical care from a government clinic in the past year (measured in 2010 and de-meaned) and its interaction with "NGO × Gov in 2010" and "NGO × No Gov in 2010". The child health behavior index is the average standardized effect of 4 variables: whether children are fully immunized, sleep under bednet, drink treated water, or wash hands before food and after toilet. We define a village to have abundant (resp., scarce) skilled labor supply if the share of public or private sector workers (non-farmers) is in the top quartile (resp., in the bottom three quartiles). *** p<0.01, ** p<0.05, * p<0.1.

Other Skilled Workers: Teachers

	Dependent Variable	
	(1)	(2)
	School Closures in 2012	
	School was open at least 1 day in the past week = {0, 1}	Number of children who attended school at least 1 day in the past week
Mean Dep.Var.	**0.853**	**1.475**
NGO × Gov in 2010	-0.038	-0.043
	(0.023)	(0.101)
NGO × No Gov in 2010	-0.047*	-0.164**
	(0.024)	(0.079)
Gov in 2010	0.001	0.004
	(0.031)	(0.110)
Constant	0.883***	1.520***
	(0.023)	(0.073)
Observations	2,747	2,747
R-squared	0.019	0.068

Notes: Observations are at the household level. In parentheses, we present standard errors clustered at the village level. All regressions include area fixed effects, and the following controls (measured in 2010 and de-meaned) and their interactions with government presence in 2010: private clinic within 10km and the number of households in the village. *** p<0.01, ** p<0.05, * p<0.1.

Conclusion

- Nuanced picture of how NGOs can both help and hinder the development of public services in poor countries
- NGO can complement gov services in places where skilled labor is abundant
- In places with few skilled workers, NGOs can reduce gov capacity by poaching the gov worker
  - Supports concerns of aid workers
- Policy implications: There's room for improvement
  - NGOs can pay local market wages (coordinate with gov, design mechanisms to screen out gov workers)
  - Governments keep better data to coordinate with NGOs

The End

Thank you!