

Corporate Governance and Social Impact of Non-Profits:
Evidence from a Randomized Program
in Healthcare in the Democratic Republic of Congo

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Research Question

- How can **non-profit** organizations **improve their governance** to **increase their social impact**?
 - Long-standing literature on for-profits
 - Acknowledges importance of corporate governance for firm performance and long-term success (e.g., reviews by Aguilera et al. 2016, Tirole 2006)
 - Need for governance arises from **agency conflict** due to separation between ownership and control
 - To mitigate agency conflict and align managers' interests with those of shareholders, various **governance mechanisms** are used (e.g., performance pay, managerial ownership, shareholder power)
 - ➔ **Maximization of firm value**
 - Focus of extant literature: **for-profit** organizations
 - What about the governance of **non-profit** organizations?

Unique Nature of Non-Profits

- Key differences between non-profits and for-profits:
 - Non-profits **maximize social value** (as opposed to firm value)
 - Non-profits face “**non-distribution constraint**”
 - Non-profits are not allowed to distribute profits to donors or employees
 - Instead, they must be retained and devoted to social objectives of non-profits
 - Non-profits **don't have owners**
 - Investors who fund non-profits (through donations) have
 - No claim on non-profits' revenues and assets
 - No control rights over the organization
 - Are not beneficiaries of non-profits (society and environment are)
- ➔ Many governance tools available to for-profits (e.g., performance pay, managerial ownership) are **not available** to non-profits

Importance of Research Question

- Research question:

➤ How can **non-profit** organizations **improve their governance** to **increase their social impact**?

➤ Economic and social importance:

- Non-profit sector represents a **large part of global economy**
 - E.g., 1/3 of total employment in social sector (United Nations 2018)
- Every year, **large amounts of funds and efforts** invested in non-profits in pursuit of social and environmental causes

➔ Efficient use of funds important

- For **non-profit organizations** per se
- For **donors and impact investors**
- For achievement of **UN Sustainable Development Goals (SDGs)**

United Nations' Sustainable Development Goals (SDGs)



This Study's Focus: Health (SDG #3)

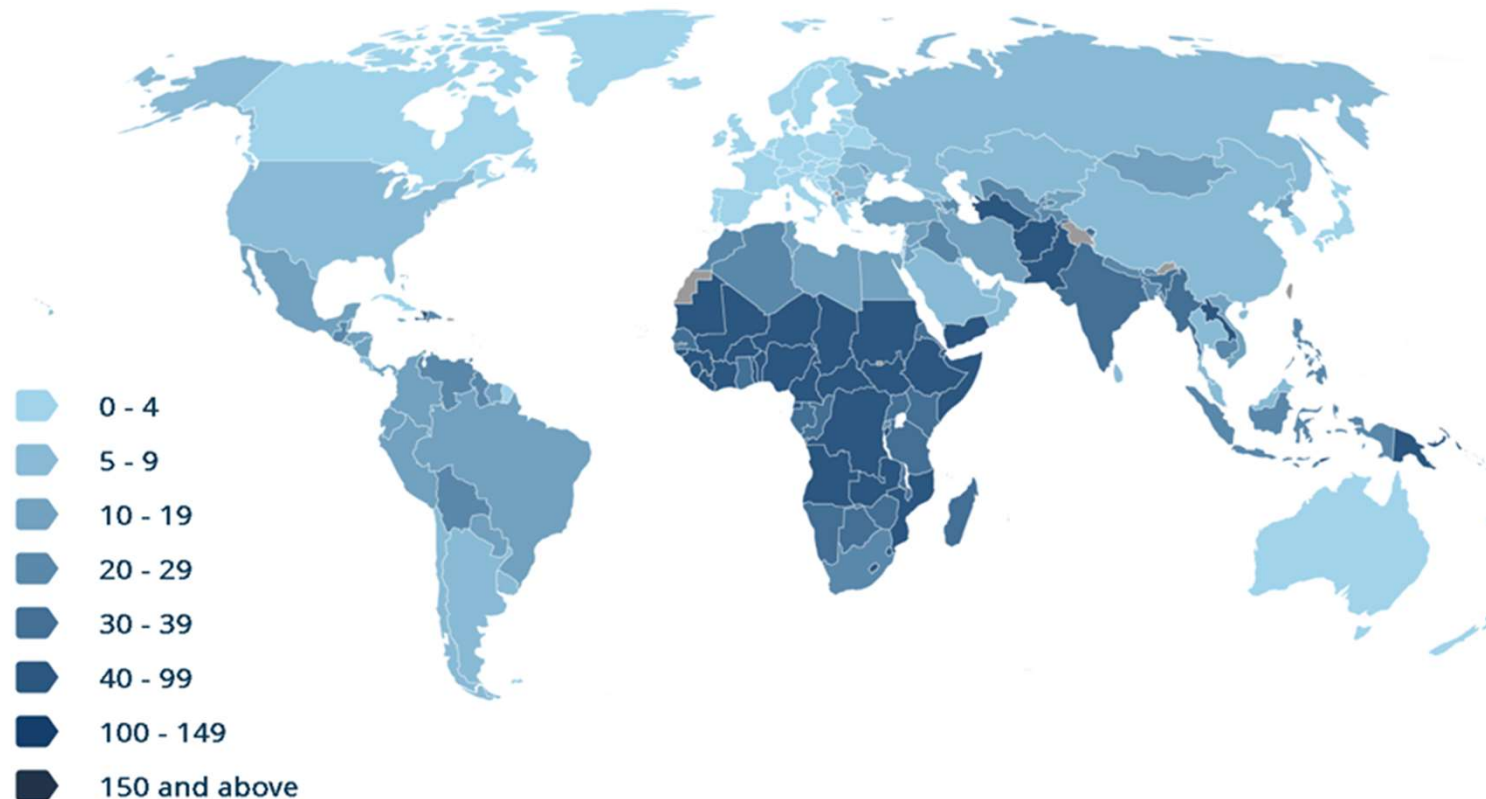


Stark Disparities in Global Health

- Importance of improving children health
 - **Major progress** made in improving global health in past years
 - Reducing premature deaths and increasing life expectancy (WHO 2018)
 - Yet, **stark disparities exist** across regions and countries
 - **Sub-Saharan Africa** remains region with highest mortality rate (United Nations 2018, WHO 2018)
 - **8% of children die before 5th birthday** (14 times higher than in high-income countries)
 - **7% of infants die before 1st birthday** in the DRC (compared to 0.4% in France and 0.6% in USA)

This Study's Context: DRC

- Democratic Republic of Congo (DRC) among countries with highest infant mortality rate



Source: United Nations Inter-Agency Group for Child Mortality Estimation (<https://childmortality.org/data>).

Randomized Governance Program in the DRC

- **Randomized governance program**

- Implemented in healthcare sector of the DRC
- About 1,000 non-profit health centers
 - Randomly assigned to
 - treatment group
 - control group
- **“Governance treatment”**:
 - Adoption of pro-social incentives and auditing



Overview of Results

- Findings indicate that
 - Adoption of governance bundle (pro-social incentives and auditing) leads to
 - **Higher operating efficiency** (i.e. increase in health services per employee)
 - **Improved social performance** (i.e. reduction in stillbirths and neonatal deaths)
 - Density of peer organizations matters
 - Governance **more effective** in regions **with lower density** of peer organizations
 - **Funding is not a substitute** for governance
 - Health centers that receive funding only
 - Increase their scale (i.e. number of employees and services)
 - Do not improve operating efficiency nor social performance
- ➔ Pro-social incentives and auditing play important role in
 - **Achieving non-profits' objectives** and
 - **Increasing social impact** of funds invested

Agenda

1. Introduction
2. Theoretical Background
3. Data
4. Methodology
5. Results
 - a) Main Results
 - b) Robustness
 - c) Dynamics of Treatment Effect
 - d) Moderating Role of Density of Health Centers
6. Effectiveness of Funding vs. Governance
7. Discussion and Conclusion

Governance Challenges of Non-Profits

- Two key governance challenges
 - 1) Potential **agency conflicts**
 - i.e. misalignment of interests between non-profits and managers (and employees, respectively)
 - ➔ may lead to inefficient use of resources and undermine non-profits' ability to pursue social objectives
 - **Many governance tools** available for for-profits (e.g., profit-sharing incentives and equity-based compensation) are **not available to non-profits**
 - Providing **incentives based on financial performance**
 - Would **(mis)align interests** with profit maximization
 - Instead of aligning them with social impact maximization

Governance Challenges of Non-Profits

2) Potential **lack of knowledge** (especially in low-income countries)

- i.e. managers and employees may lack knowledge on how to improve the organization's operating efficiency and quality of services
 - For example, health sector of DRC faces several sources of inefficiencies:
 - E.g., lack of strategic and managerial planning, inadequate priorities in resource allocation, lack of transparency, lack of managerial competencies, insufficient medical training of health workers, etc. (WHO 2015)
 - These inefficiencies are likely a common challenge found across sectors and across (low-income) countries

Governance Mechanisms: Pro-Social Incentives

- Effectiveness of a “**bundle of governance mechanisms**”
 - Pro-social incentives
 - **Additional funding provided to non-profit** based on social performance (e.g., achievement of pre-determined social targets, adherence to specific guidelines and best practices, conformity with quality standards)
 - Allows non-profits to, e.g., upgrade equipment, provide training to employees, extend scope of services, etc.
 - Non-profit is direct beneficiary (as opposed to managers and employees)
 - Positive impact on **individuals’ work behavior**
 - **Indirectly**: leverage intrinsic motivation to obtain funding for cause
 - Consistent with insights from for-profit literature:
 - E.g., employees willing to forgo financial compensation for pursuit of “meaningful” work (e.g., Burbano 2016, Cassar and Meier 2018)
 - **Directly**: provide access to better equipment, training opportunities, and employer status → increase attractiveness as workplace

Governance Mechanisms: Auditing

➤ Auditing

- Auditors can **verify** that
 - best practices and protocols followed, adequate priorities for resource allocation set, strategic and managerial plan developed, practices and performance correctly documented, etc.
- Auditors can **provide feedback and recommendations** (“coaching”)
 - w.r.t. reporting, best practices, strategic planning, resource allocation, interpreting guidelines and following procedures, etc.

Impact on Operating Efficiency and Social Outcomes

⇒ Pro-social incentives and auditing likely serve as effective governance mechanisms for non-profits

➤ Hypothesis 1:

*The implementation of governance mechanisms leads to **improvements in non-profits' operating efficiency.***

➤ Hypothesis 2:

*The implementation of governance mechanisms leads to **improvements in non-profits' social performance.***

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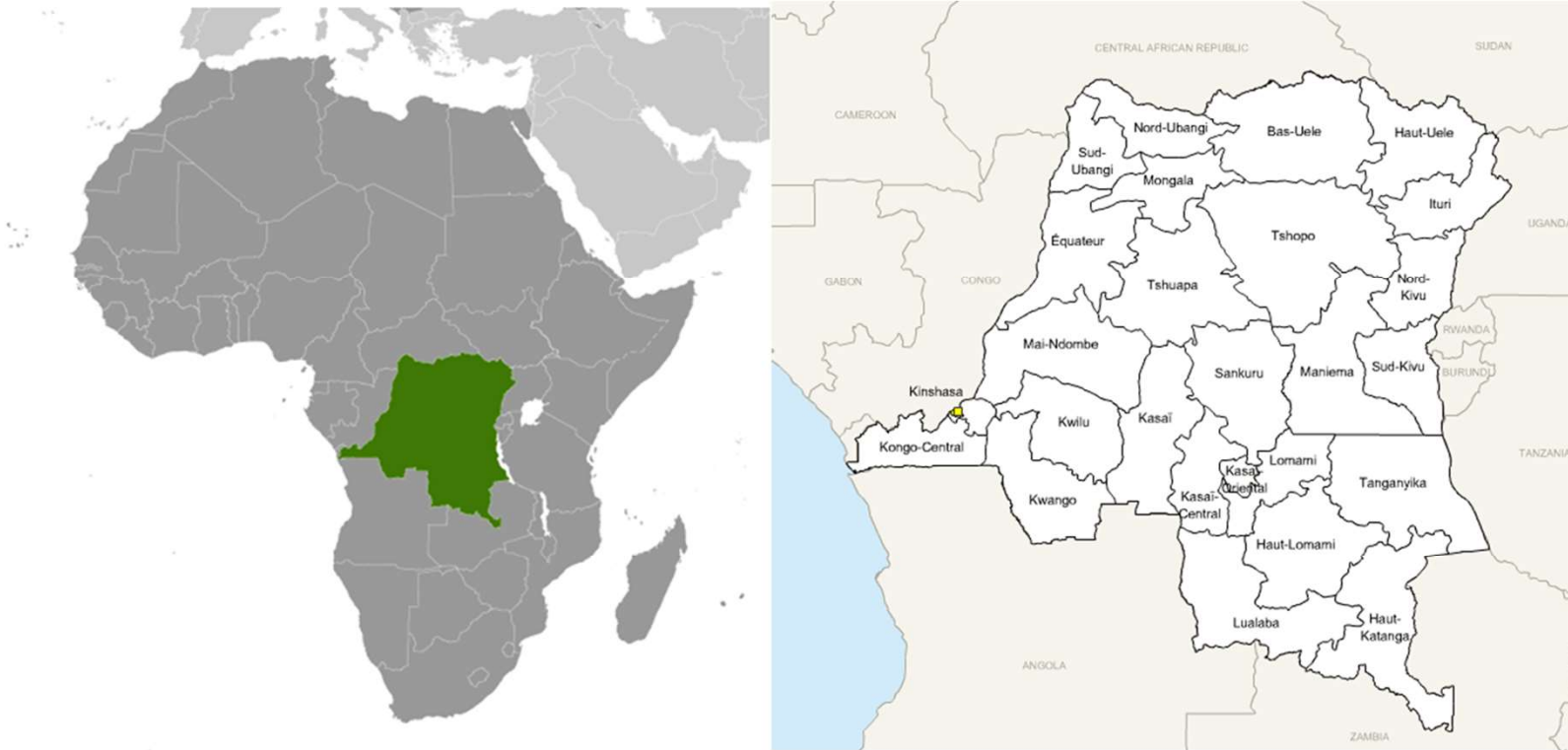
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3. Data
4. Methodology
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This Study: Focus on Health (SDG #3)



Institutional Context

- The DRC and its provinces



The PDSS Program

- Examples of health centers



The PDSS Program

- “Projet de Développement du Système de Santé” (**PDSS**)
 - Administered by the World Bank in the DRC as of 2017 Q1
 - **Randomized program** in healthcare
 - Aim: help develop the DRC healthcare system, especially with regard to maternal and children’s health
 - Reach: provides subsidies to selected health centers in 13 participating provinces in the DRC
 - Selection: Made by a team of experts appointed by the World Bank, who assessed the health centers’ suitability for the program
 - Random assignment: Selected health centers were then randomly assigned into the treatment and control groups

The PDSS Program

- Randomized assignment of health centers
 - Treatment Group
 - Financial subsidies
 - **“Governance treatment”**:
 - i) **Pro-social incentives** (i.e., provision of additional funding to health center conditional on meeting specific social objectives)
 - ii) **Auditing** by independent third parties
 - Control Group
 - Financial subsidies

➔ Ideal setup: By design, this randomized program allows to identify the **causal impact of governance on** health centers’ **operating efficiency** and **social performance**

The PDSS Program

- Data

- Coverage:

- **All health centers** in the Democratic Republic of Congo
- **10 quarters** (2017 Q1 — 2019 Q2)
- Includes detailed information on health centers'
 - Operations (e.g., staff, # of consultations, # of births)
 - Name
 - Location

- Final sample:

- **999** health centers were **included in the PDSS program**
- Randomly assigned:
 - **674** to **treatment** group (received governance treatment, plus funding)
 - **325** to **control** group (received funding only)

Summary Statistics in Q1 2017

	Obs.	Mean	Median	Std. Dev.
Panel A. Health centers statistics				
Primary healthcare services per employee	999	260.81	200.29	245.18
Employees	999	7.39	6	6.94
Doctors	999	0.08	0	0.41
Nurses	999	3.67	3	4.98
Administrative	999	3.63	3	3.48
Primary healthcare services	999	1,787	1,537	1,309
Maternal and childhood healthcare services	999	1,651	1,400	1,199
Births	999	60.09	53	41.28
Stillbirths (in %)	999	0.75	0	1.51
Neonatal deaths (in %)	999	0.46	0	1.23
Live births (in %)	999	98.78	100	2.23
Revenues (in CDF 1,000)	999	376.36	194.89	580.49
Subsidies (in CDF 1,000)	999	43.40	0.00	188.02
Panel B. Population statistics				
Population in center's health area	999	11,135	9,508	7,734
Population in center's health district	999	204,409	181,565	80,683

Randomization Tests (1)

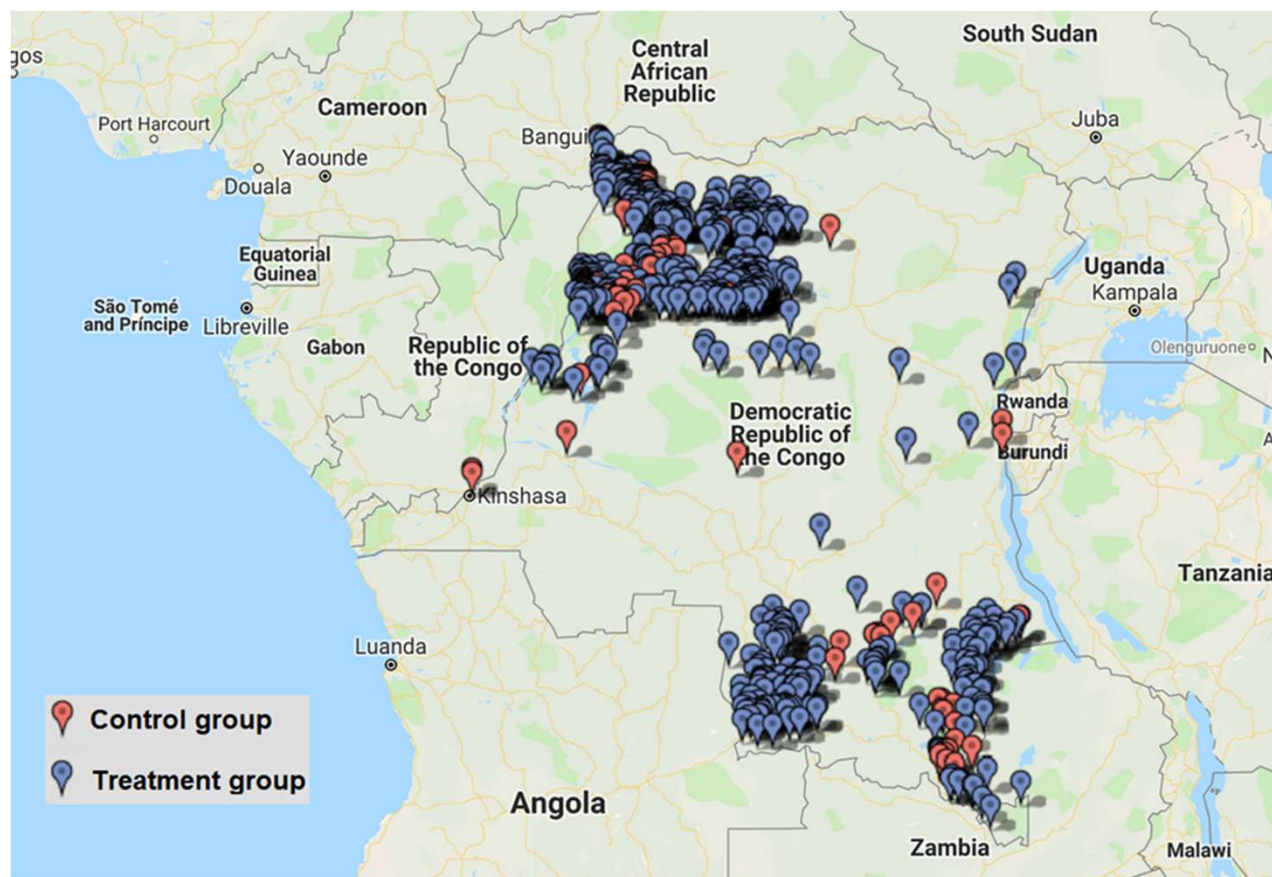
		Obs.	Mean	Median	Std. Dev.	<i>p</i> -value (diff. in means)
Panel A. Health centers statistics						
Primary healthcare services per employee	Treated	674	266.83	197.69	253.33	0.604
	Control	325	248.33	203.50	227.23	
Employees	Treated	674	7.49	6	6.58	0.649
	Control	325	7.19	6	7.65	
Doctors	Treated	674	0.09	0	0.41	0.702
	Control	325	0.07	0	0.42	
Nurses	Treated	674	3.78	3	3.90	0.346
	Control	325	3.45	3	6.69	
Administrative	Treated	674	3.62	3	3.65	0.928
	Control	325	3.66	3	3.09	
Primary healthcare services	Treated	674	1,850	1,567	1,378	0.316
	Control	325	1,655	1,470	1,142	
Maternal and childhood healthcare services	Treated	674	1,709	1,427	1,253	0.343
	Control	325	1,532	1,357	1,070	

Randomization Tests (2)

		Obs.	Mean	Median	Std. Dev.	<i>p</i> -value (diff. in means)
Panel A. Health centers statistics						
Births	Treated	674	62.64	55	42.66	0.241
	Control	325	54.80	51	37.76	
Stillbirths (in %)	Treated	674	0.80	0	1.57	0.229
	Control	325	0.66	0	1.39	
Neonatal deaths (in %)	Treated	674	0.48	0	1.26	0.701
	Control	325	0.44	0	1.19	
Live births (in %)	Treated	674	98.73	100	2.27	0.343
	Control	325	98.90	100	2.13	
Revenues (in CDF 1,000)	Treated	674	365.16	177.93	581.07	0.578
Subsidies (in CDF 1,000)	Treated	674	48.82	0.00	199.61	0.365
Control	Control	325	32.16	0.00	161.07	
Panel B. Population statistics						
Population in center's health area	Treated	674	11,090	9,491	6,377	0.896
	Control	325	11,227	9,847	9,988	
Population in center's health district	Treated	674	201,829	181,565	73,925	0.716
	Control	325	209,760	177,275	93,047	

The PDSS Program

- Location of treatment and control health centers



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1. Introduction
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Difference-in-Differences Approach

- Treatment: **“Governance treatment”**
 - Adoption of a bundle of governance mechanisms (pro-social incentives and auditing)
- Difference-in-differences methodology:
 - Before versus after treatment
 - Treatment versus control group
- Treatment group:
 - Health centers receiving funding and “governance treatment”
- Control group:
 - Health centers receiving funding only

Difference-in-Differences Approach

BEFORE TREATMENT
(Q1 2017)



Outcome variable
treated health center T



Outcome variable
control health center C

AFTER TREATMENT
(e.g., 10 QUARTERS LATER)



Outcome variable
treated health center T



Outcome variable
control health center C

Difference after versus before (treated health center): $\Delta y_{Q1-Q10, T} = y_{Q10, T} - y_{Q1, T}$

Difference after versus before (control health center): $\Delta y_{Q1-Q10, C} = y_{Q10, C} - y_{Q1, C}$

Difference-in-differences: $\Delta(\Delta y) = \Delta y_{Q1-Q10} = \Delta y_{Q1-Q10, T} - \Delta y_{Q1-Q10, C}$

Difference-in-Differences Approach

$$\Delta y_{i,Q1-Q10} = \alpha_p + \beta \times treatment_i + \varepsilon_i$$

- y : outcome variable of interest of health center i
- α_p : province fixed effects
- $treatment$: treatment indicator
 - Equal **1** for health centers in **treatment** group
 - Equal **0** for health centers in **control** group
- ε : error term (standard errors clustered at health district level)

Main Dependent Variables

- **Operating efficiency:**

$$\frac{\text{\# Primary healthcare services performed}}{\text{\# Employees}}$$

- Essentially “output per employee” (= labor productivity)
- Note: health centers only offer primary healthcare services, mainly maternity and childhood services

- **Quality of healthcare services:**

- **Share of stillbirths** = % stillbirths relative to total births

- Stillbirth refers to baby born with no sign of life at or after 28 weeks of gestation

- **Share of neonatal deaths** = % neonatal deaths relative to total births

- Neonatal death refers to a baby who dies within the first 28 days of life

- **Share of live births** = % live births relative to total births

- Live births refers to a baby who is still alive after the first 28 days of life

Agenda

1. Introduction
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4. Methodology
5. Results
 - a) Main Results
 - b) Robustness
 - c) Dynamics of Treatment Effect
 - d) Moderating Role of Density of Health Centers
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7. Discussion and Conclusion

Impact of Governance on Health Center Outcomes

	Health center operating efficiency	Health center employees				Volume of healthcare services		
	Δ Primary healthcare services per employee	% Δ Emp.	% Δ Doctors	% Δ Nurses	% Δ Admin. employees	% Δ Primary healthcare services	% Δ Maternal and childhood healthcare services	% Δ Births
Treatment	93.075*** (31.022)	-0.085 (0.089)	0.013 (0.016)	0.001 (0.075)	-0.099* (0.056)	0.134 (0.261)	0.069 (0.253)	0.128 (0.169)
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.198	0.055	0.018	0.046	0.028	0.162	0.155	0.080
Observations	999	999	999	999	999	999	999	999

Operating efficiency increases by $93.1/266.8 = 34.9\%$

Impact of Governance on Health Center Outcomes

Health center operating efficiency		Health center employees				Volume of healthcare services		
		%Δ Emp.	%Δ Doctors	%Δ Nurses	%Δ Admin. employees	%Δ Primary healthcare services	%Δ Maternal and childhood healthcare services	%Δ Births
Δ Primary healthcare services per employee	93.075*** (31.022)	-0.085 (0.089)	0.013 (0.016)	0.001 (0.075)	-0.099* (0.056)	0.134 (0.261)	0.069 (0.253)	0.128 (0.169)
Treatment	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.198	0.055	0.018	0.046	0.028	0.162	0.155	0.080
Observations	999	999	999	999	999	999	999	999

Efficiency gains are derived mainly from reduction in administrative overhead

Impact of Governance on Health Center Outcomes

Quality of healthcare services			
	Δ Share of stillbirths	Δ Share of neonatal deaths	Δ Share of live births
Treatment	-0.345*** (0.108)	-0.276** (0.138)	0.621*** (0.209)

Pre-treatment share of stillbirths = 0.8 percentage points

→ **Reduction in stillbirth probability** by $0.35/0.8 = 43.8\%$

Pre-treatment share of neonatal deaths = 0.48 percentage points

→ **Reduction in neonatal death probability** by $0.28/0.48 = 58.3\%$

Impact of Governance on Health Center Outcomes

Quality of healthcare services			
	Δ Share of stillbirths	Δ Share of neonatal deaths	Δ Share of live births
Treatment	-0.345*** (0.108)	-0.276** (0.138)	0.621*** (0.209)
Province fixed effects	Yes	Yes	Yes

Governance treatment leads to **substantial improvements in social performance**

Impact on Operating Efficiency and Social Outcomes

- Results supportive of

- Hypothesis 1:

*The implementation of governance mechanisms leads to **improvements in non-profits' operating efficiency.***

- Hypothesis 2:

*The implementation of governance mechanisms leads to **improvements in non-profits' social performance.***

Agenda

1. Introduction
2. Theoretical Background
3. Data
4. Methodology
5. Results
 - a) Main Results
 - b) Robustness
 - c) Dynamics of Treatment Effect
 - d) Moderating Role of Density of Health Centers
6. Effectiveness of Funding vs. Governance
7. Discussion and Conclusion

Robustness: Controls

	Health center operating efficiency	Health center employees				Volume of healthcare services		
	Δ Primary healthcare services per employee	% Δ Emp.	% Δ Doctors	% Δ Nurses	% Δ Admin. employees	% Δ Primary healthcare services	% Δ Maternal and childhood healthcare services	% Δ Births
Treatment	89.697*** (29.873)	-0.078 (0.081)	0.012 (0.016)	0.007 (0.069)	-0.098* (0.056)	0.140 (0.239)	0.073 (0.232)	0.139 (0.145)
Log(subsidies)	6.816 (8.493)	0.007 (0.012)	0.002 (0.003)	0.001 (0.011)	0.004 (0.005)	0.027 (0.029)	0.029 (0.029)	0.001 (0.018)
Log(employees)	42.344 (26.595)	-0.647*** (0.068)	-0.017 (0.017)	-0.487*** (0.051)	-0.142*** (0.038)	-1.102*** (0.274)	-1.081*** (0.269)	-0.743*** (0.150)
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.207	0.351	0.022	0.268	0.071	0.290	0.285	0.237
Observations	999	999	999	999	999	999	999	999

Robustness: Controls

	Quality of healthcare services		
	Δ Share of stillbirths	Δ Share of neonatal deaths	Δ Share of live births
Treatment	-0.340*** (0.109)	-0.265* (0.142)	0.605*** (0.214)
Log(subsidies)	-0.003 (0.024)	-0.024 (0.024)	0.028 (0.039)
Log(employees)	-0.185** (0.073)	-0.117 (0.081)	0.302** (0.126)
Province fixed effects	Yes	Yes	Yes
R-squared	0.020	0.020	0.027
Observations	999	999	999

Robustness: Gaming

- Quality of healthcare services at other entities within same district

	Hospitals in same health district as treated health centers			Control health centers in same health district as treated health centers			Outside health centers in same health district as treated health centers		
	Δ Share of stillbirths	Δ Share of neonatal deaths	Δ Share of live births	Δ Share of stillbirths	Δ Share of neonatal deaths	Δ Share of live births	Δ Share of stillbirths	Δ Share of neonatal deaths	Δ Share of live births
Mean	-0.037 (0.258)	-0.056 (0.053)	0.093 (0.274)	-0.124 (0.110)	0.015 (0.116)	0.109 (0.186)	0.088 (0.088)	-0.008 (0.051)	-0.080 (0.118)
Observations	121	121	121	72	72	72	1,192	1,192	1,192

Agenda

1. Introduction
2. Theoretical Background
3. Data
4. Methodology
5. Results
 - a) Main Results
 - b) Robustness
 - c) Dynamics of Treatment Effect
 - d) Moderating Role of Density of Health Centers
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Dynamics of Treatment Effect

	Health center operating efficiency	Health center employees				Volume of healthcare services		
	Δ Primary healthcare services per employee	% Δ Emp.	% Δ Doctors	% Δ Nurses	% Δ Admin. employees	% Δ Primary healthcare services	% Δ Maternal and childhood healthcare services	% Δ Births
Treatment (Δ Q1 – Q2)	12.867 (19.724)	-0.026 (0.064)	0.012 (0.008)	0.006 (0.045)	-0.045 (0.030)	-0.094 (0.196)	-0.111 (0.192)	-0.105 (0.140)
Treatment (Δ Q1 – Q3)	10.618 (25.628)	-0.028 (0.059)	0.013 (0.010)	-0.001 (0.041)	-0.041 (0.031)	-0.112 (0.192)	-0.147 (0.184)	-0.170 (0.125)
Treatment (Δ Q1 – Q4)	-6.064 (28.691)	0.015 (0.071)	0.014 (0.010)	0.037 (0.054)	-0.035 (0.034)	0.003 (0.229)	-0.043 (0.219)	-0.004 (0.158)
Treatment (Δ Q1 – Q5)	2.106 (30.014)	-0.022 (0.068)	0.006 (0.014)	0.041 (0.063)	-0.069* (0.039)	0.028 (0.191)	-0.020 (0.185)	-0.027 (0.149)
Treatment (Δ Q1 – Q6)	2.760 (34.077)	0.042 (0.083)	0.011 (0.012)	0.104 (0.065)	-0.073* (0.043)	0.079 (0.218)	0.034 (0.208)	0.000 (0.162)
Treatment (Δ Q1 – Q7)	45.171 (32.000)	-0.021 (0.066)	-0.005 (0.014)	0.059 (0.053)	-0.075* (0.044)	0.120 (0.217)	0.084 (0.208)	0.086 (0.164)
Treatment (Δ Q1 – Q8)	27.349 (34.870)	-0.014 (0.085)	-0.004 (0.015)	0.080 (0.063)	-0.089* (0.051)	0.031 (0.229)	-0.008 (0.218)	0.051 (0.178)
Treatment (Δ Q1 – Q9)	82.690** (37.829)	-0.056 (0.087)	0.004 (0.016)	0.052 (0.069)	-0.112** (0.056)	-0.000 (0.232)	-0.050 (0.224)	0.007 (0.173)
Treatment (Δ Q1 – Q10)	93.075*** (31.022)	-0.085 (0.089)	0.013 (0.016)	0.001 (0.075)	-0.099* (0.056)	0.134 (0.261)	0.069 (0.253)	0.128 (0.169)

Dynamics of Treatment Effect

	Quality of healthcare services		
	Δ Share of stillbirths	Δ Share of neonatal deaths	Δ Share of live births
Treatment (Δ Q1 – Q2)	-0.035 (0.126)	-0.078 (0.117)	0.113 (0.169)
Treatment (Δ Q1 – Q3)	-0.015 (0.138)	-0.156 (0.108)	0.171 (0.192)
Treatment (Δ Q1 – Q4)	0.026 (0.138)	-0.021 (0.090)	-0.005 (0.176)
Treatment (Δ Q1 – Q5)	-0.179 (0.152)	-0.172 (0.128)	0.351 (0.216)
Treatment (Δ Q1 – Q6)	-0.165 (0.136)	-0.036 (0.133)	0.201 (0.234)
Treatment (Δ Q1 – Q7)	-0.192 (0.130)	-0.167 (0.120)	0.358* (0.202)
Treatment (Δ Q1 – Q8)	-0.350** (0.137)	-0.056 (0.143)	0.406* (0.222)
Treatment (Δ Q1 – Q9)	-0.335*** (0.113)	-0.212 (0.132)	0.546*** (0.189)
Treatment (Δ Q1 – Q10)	-0.345*** (0.108)	-0.276** (0.138)	0.621*** (0.209)

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3. Data
4. Methodology
5. Results
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 - b) Robustness
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Moderating Role of the Density of Peer Organizations

- Geographic proximity of peer organizations matters
 - Information flow and spread of business practices play important role for governance
 - 1) **Information and knowledge** are **more easily shared**
 - Geographic proximity plays important role in facilitating information flow and diffusion of business practices (e.g., Abrahamson 1991, Forman, Goldfarb, and Greenstein 2005, Galaskiewicz and Wasserman 1989)
 - 2) **Higher competitive pressure**
 - Threat of losing clientele to peer organizations pressures managers and employees to operate more efficiently and deliver higher-quality services
- ⇒ Need for governance—and hence benefits from improved governance—likely stronger in areas with lower density of peers

Moderating Role of the Density of Peer Organizations

	Health center operating efficiency	Health center employees				Volume of healthcare services		
		%Δ Emp.	%Δ Doctors	%Δ Nurses	%Δ Admin. employees	%Δ Primary healthcare services	%Δ Maternal and childhood healthcare services	%Δ Births
Treatment × Low # of health centers	110.577*** (35.556)	-0.089 (0.102)	0.023 (0.017)	0.026 (0.084)	-0.138** (0.058)	0.143 (0.301)	0.089 (0.292)	0.128 (0.193)
Treatment × High # of health centers	21.819 (41.613)	-0.067 (0.097)	-0.028 (0.032)	-0.102 (0.072)	0.063 (0.064)	0.100 (0.338)	-0.015 (0.326)	0.130 (0.196)
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.202	0.055	0.023	0.048	0.042	0.162	0.156	0.080
Observations	999	999	999	999	999	999	999	999

Moderating Role of the Density of Peer Organizations

	Quality of healthcare services		
	Δ Share of stillbirths	Δ Share of neonatal deaths	Δ Share of live births
Treatment × Low # of health centers	-0.399*** (0.115)	-0.377*** (0.112)	0.776*** (0.189)
Treatment × High # of health centers	-0.125 (0.154)	0.134 (0.450)	-0.010 (0.557)
Province fixed effects	Yes	Yes	Yes
R-squared	0.017	0.024	0.027
Observations	999	999	999

Agenda

1. Introduction
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6. Effectiveness of Funding vs. Governance
7. Discussion and Conclusion

Governance Mechanisms vs. Financial Subsidies

- Complements or substitutes?
 - Financial subsidies alone
 - Help non-profits alleviate financing constraints and invest
 - Help increase scale of non-profits' operations, but without improving operating efficiency nor quality of services
 - Financial subsidies in combination with governance mechanisms
 - Improve i) scale of operations, and ii) operating efficiency and social performance
 - ➔ **likely** serve as **complements** towards increasing social impact

Treatment, Control, and “Outside” Group

- Health Centers include

- Random assignment
- **Treatment** group
 - Health centers included in the PDSS program
 - Received **funding** and **governance treatment** from PDSSS program
 - **Control** group
 - Health centers included in the PDSS program
 - Received **funding** only from PDSSS program
 - **“Outside”** group
 - Health centers outside the PDSS program
 - Received **no funding** nor **governance treatment** from PDSSS program
 - Sample: **5,832** health centers in outside group

Note: In-/Exclusion of PDSS program **not random**

- What is **random** is the assignment to **treatment vs control** group **within** the PDSS program

“Outside” Group

- Summary statistics for outside group

	Obs.	Mean	Median	Std. Dev.
Panel A. Health centers statistics				
Primary healthcare services per employee	5,832	146.86	83.66	378.89
Employees	5,832	5.39	4	6.97
Doctors	5,832	0.22	0	0.82
Nurses	5,832	2.84	2	4.71
Administrative	5,832	2.33	2	2.81
Primary healthcare services	5,832	1,015	459	1,619
Maternal and childhood healthcare services	5,832	945	436	1,496
Births	5,832	26.91	13	41.68
Stillbirths (in %)	5,832	0.53	0	1.93
Neonatal deaths (in %)	5,832	0.31	0	1.65
Live births (in %)	5,832	99.17	100	2.88
Panel B. Population statistics				
Population in center’s health area	5,832	11,918	9,495	8,700
Population in center’s health district	5,832	215,158	194,315	94,966

Effectiveness of Funding vs. Governance

- Use **nearest-neighbor matching**
 - To match health centers in treatment group (and control group, respectively) to health centers in outside group
- Using the outside group, we can examine whether funding and governance are complements or substitutes:
 - Effectiveness of **'funding and governance'**
 - By comparing treatment group vs. outside group
 - Effectiveness of **'funding only'**
 - By comparing control group vs. outside group



Effectiveness of ‘Funding and Governance’

- Treatment group vs. “outside” group

	Health center operating efficiency	Health center employees				Volume of healthcare services		
	Δ Primary healthcare services per employee	% Δ Emp.	% Δ Doctors	% Δ Nurses	% Δ Admin employees	% Δ Primary healthcare services	% Δ Maternal and childhood healthcare services	% Δ Births
Treatment vs. outside	98.125*** (26.170)	0.191** (0.082)	-0.008 (0.015)	0.221*** (0.067)	-0.022 (0.046)	0.764*** (0.234)	0.703*** (0.230)	0.630*** (0.135)
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.180	0.085	0.015	0.067	0.041	0.156	0.149	0.126
Observations	1,348	1,348	1,348	1,348	1,348	1,348	1,348	1,348

Effectiveness of 'Funding and Governance'

	Quality of healthcare services		
	Δ Share of stillbirths	Δ Share of neonatal deaths	Δ Share of live births
Treatment vs. outside	-0.325** (0.156)	-0.428* (0.223)	0.753** (0.312)
Province fixed effects	Yes	Yes	Yes
R-squared	0.017	0.018	0.023
Observations	1,348	1,348	1,348

'Funding and governance' lead to both **i)** increases in **scale** and **ii)** improvements in **operating efficiency** and **quality of services**
 → Funding and governance are **complements** in increasing social impact

Effectiveness of Funding Only

- Control group vs. “outside” group

	Health center operating efficiency	Health center employees				Volume of healthcare services		
	Δ Primary healthcare services per employee	%Δ Emp.	%Δ Doctors	%Δ Nurses	%Δ Admin. employees	%Δ Primary healthcare services	%Δ Maternal and childhood healthcare services	%Δ Births
Control vs. outside	-38.789 (53.040)	0.250*** (0.070)	-0.013 (0.013)	0.193*** (0.058)	0.071 (0.045)	0.335* (0.193)	0.343* (0.190)	0.287*** (0.094)
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.170	0.103	0.034	0.077	0.068	0.305	0.313	0.189
Observations	650	650	650	650	650	650	650	650

Effectiveness of Funding Only

	Quality of healthcare services		
	Δ Share of stillbirths	Δ Share of neonatal deaths	Δ Share of live births
Control vs. outside	-0.137 (0.183)	-0.193 (0.257)	0.330 (0.368)
Province fixed effects	Yes	Yes	Yes
R-squared	0.019	0.032	0.024
Observations	650	650	650

'Funding only' only leads to increases in scale
 → Funding is **not a substitute** for governance

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Key Findings

- Findings indicate that
 - Adoption of governance bundle (pro-social incentives and auditing) leads to
 - **Higher operating efficiency** (i.e. increase in health services per employee)
 - **Improved social performance** (i.e. reduction in stillbirths and neonatal deaths)
 - Density of peer organizations matters
 - Governance **more effective** in regions **with lower density** of peer organizations
 - **Funding is not a substitute** for governance
 - Health centers that receive funding only
 - Increase their scale (i.e. number of employees and services)
 - Do not improve operating efficiency nor social performance
- ➔ Pro-social incentives and auditing play key role in
 - **Achieving non-profits' objectives** and
 - **Increasing social impact** of funds invested

Implications for Practice

- Important implications for practice:
 - Every year, **considerable efforts and large amounts of funds** are invested in non-profits
 - Aiming to achieve the seventeen **SDGs** of the United Nations (e.g., ending poverty, reducing hunger, promoting healthy lives and well-being, reducing inequalities, addressing climate change, etc.)



- The insights of this study **help inform**
 - **non-profit organizations**
 - their **donors and impact investors**about governance mechanisms that are **available and effective** in
 - i) achieving **non-profits' objectives**, and
 - ii) **maximizing social impact of funds invested**

Conclusion

Thank You!

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Covariate Balance Post-Matching

	Treatment vs. "outside" group		Control vs. "outside" group	
	Obs.	<i>p</i> -value (diff. in means)	Obs.	<i>p</i> -value (diff. in means)
Panel A. Health centers statistics				
Primary healthcare services per employee	1,348	0.265	650	0.112
Employees	1,348	0.575	650	0.594
Doctors	1,348	0.354	650	0.680
Nurses	1,348	0.692	650	0.836
Administrative	1,348	0.403	650	0.223
Primary healthcare services	1,348	0.758	650	0.178
Maternal and childhood healthcare services	1,348	0.766	650	0.214
Births	1,348	0.839	650	0.352
Stillbirths (in %)	1,348	0.943	650	0.466
Neonatal deaths (in %)	1,348	0.412	650	0.856
Live births (in %)	1,348	0.949	650	0.893
Panel B. Population statistics				
Population in center's health area	1,348	0.952	650	0.754
Population in center's health district	1,348	0.706	650	0.845