



# Helping the Poor as a Non Cooperative Game

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## THE POLICY CONTEXT

Two policy questions dominate the debate on welfare crisis:

- 1) ways to gain efficiency and cost reduction in public service delivery
- 2) effectiveness, i.e. the ability of public money to reach socially desirable outcomes

Mechanisms

Interactions among players

Policy success or failure

## GIVING MONEY

Three different ways through which aid is delivered:

- 1) helping occasionally
- 2) helping systematically (basic income)
- 3) Stakeholding / asset building (conditionality)

Public bureaucrats tend to be risk averse

Private charities are a patchy landscape

This asymmetry works against experimentation in public welfare and hinders the implementation of effective reforms

## A FRESH RETHINKING

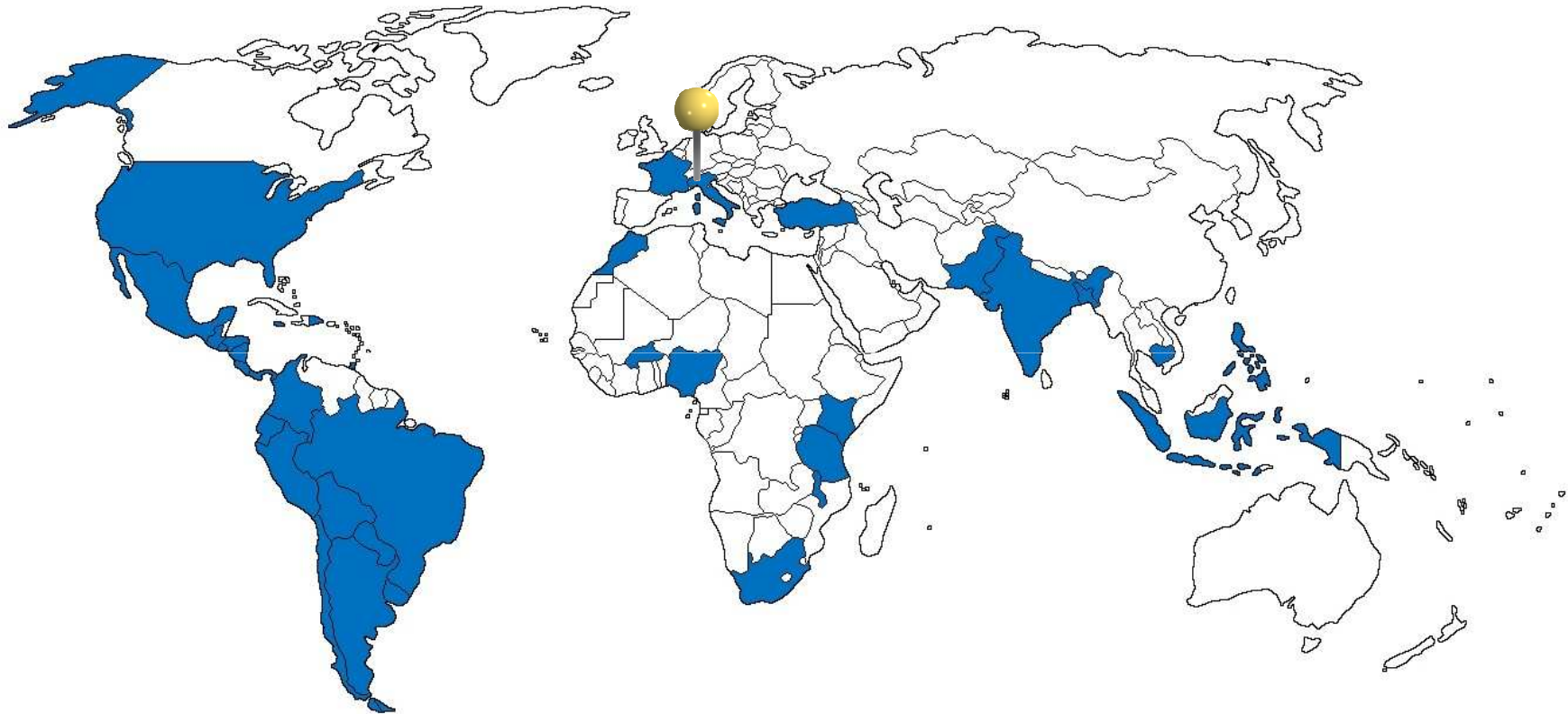


Conditionality as a way to changes personal behavior or facts that are established as *a priori* goods by the state or charities patronage

Asset building choices as personal investments in good practices

- education
- school attendance
- preventive health
- saving

# CONDITIONAL CASH TRANSFER IN THE WORLD



## Sources

- J-PAL Europe, <http://bit.ly/1iwVLCB>
- Stampini, M. and Tornarolli, L., *The Growth of Conditional Cash Transfers in Latin America and the Caribbean: Did They Go Too Far?*, Inter-American Development Bank Policy Brief No. IDB-PB-185 (November 2012), URL: [bit.ly/1geiMNN](http://bit.ly/1geiMNN)
- NYC Center for Economic Opportunity, <http://on.nyc.gov/19eerpm>
- The World Bank, <http://bit.ly/141aAs1>
- Ufficio Pio, <http://www.xcorsi.org/>

## CONDITIONALITY AS A GAME

- a) Conditionality better outcomes
- b) Future generations
- c) Reassuring middle class...**but**

....social outcomes and payoffs are difficult to measure

theoretical payoffs

Giver/recipient

Non cooperative game without feedback

## PLAYERS

Two players:



institution (the giver) is established with the official mission to help the poor



the applicant

The giver and the recipient have competing interests

The applicant (worst case) type tends to stay in the status quo (personal asset building resistance)

Payoff of the philanthropic activity :

- quantity of "treated" cases, or "managed files"
- improvement in human capital of the recipient



## POLICY HYPOTHESIS

Prevalence of the intermediate goal is a natural outcome due to bureaucracy ...and principal/agent problems

...and becomes rapidly a common knowledge in the "welfare lines", backward induction could trigger opportunistic behavior

## PRINCIPAL/AGENT

Employees select eligible applicants

Eligibility criteria are frequently non univocal, giving room for discretionality

Tagging resumes employees decisions.

The accuracy of tagging depends on the effort of the social workers, which is private information

Then the principal/agent possible conflict

## THE GAME: FRAMEWORK

	Give	Not Give
Change	$v, 1$	$c, 0$
Not change	$s, m$	$0, e$

$v$  is the payoff of the applicant when he improves his behavior while receiving help;

$c$  is the payoff of the applicant who does not receive help but does change his behavior and thus improves its social status;

$s$  is the payoff due to unconditional help from the giver, without any investment from the applicant.

## THE GAME: FIRST CASE

$$m > e$$

Nash equilibrium of the game is :not change, give

	Give	Not Give
Change	$v, 1$	$c, 0$
Not change	$s, m$	$0, e$

**NASH EQUILIBRIUM**

## THE GAME: SECOND CASE

$$m < e$$

best reply  $p = B_R(q)$  of the applicant to a given strategy  $q$  of the giver is

$$p = 1 \quad \text{if } q < q^*,$$

*prodigal giver*

$$p = [0,1] \quad \text{if } q = q^*,$$

*equalizer/indifference*

$$p = 0 \quad \text{if } q > q^*,$$

*strict giver*

where  $q^* = c / (c+s-v)$  is the giver's strategy that equalize (indifference) applicant payoffs

## THE GAME: SECOND CASE

$$m < e$$

Analogously, the best reply  $q = B_c(p)$  of the giver to a given strategy  $p$  of the applicant is

$q = 0$	if $p < p^*$ ,	<i>opportunistic recipient</i>
$q = [0,1]$	if $p = p^*$ ,	<i>equalizer/indifference</i>
$q = 1$	if $p > p^*$ ,	<i>willing recipient</i>

where  $p^* = (e-m) / (1+e-m)$

## THE GAME: SECOND CASE

$$m < e$$

Lazy applicant plays  $p < p^*$  and the giver BR is strict

Willing applicant plays  $p > p^*$  and the giver BR is "give"

	Give	Not Give
Change	$v, 1$	$c, 0$
Not change	$s, m$	$0, e$

Willingness meets prodigality

Willingness meets strictness

Laziness meets prodigality

Laziness meets strictness

## THE GAME: INTERPRETATION

Being strict is the best response to laziness or unwillingness

But being strict (reducing  $q$ ) brings a reduced payoff in terms of “ $m$ ” (treated position), signaling a conflict of interest inside the donor...

Strictness could be a NOT credible threat because it is not incentive compatible



## THE GAME: REPETITION

With repetition we get richer strategies

Nash Folk's theorem applies and it can be shown that the payoffs  $c$  and  $e$  are the minimax payoffs for applicant and the giver, respectively

Trigger strategy: (change, give) at all stages of the game, and unconditionally punish forever (i.e., switch to the alternative strategies) if the opponent deviates

## CONCLUSIONS/RESEARCH OUTLOOK

IF: Donor's incentives/ institutional design becomes common knowledge AND

Backward induction could trigger opportunistic behavior

THEN :Design donor's incentives and payoffs with asset building-oriented setting

Enforce conditionality through game-repetition with inspections

Collecting empirical data on conditionality outcomes in different scenarios and applying the simulation in practical case with experiments is a possible research outlook.



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