Global multidimensional poverty and COVID-19: A decade of progress at risk?

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Background

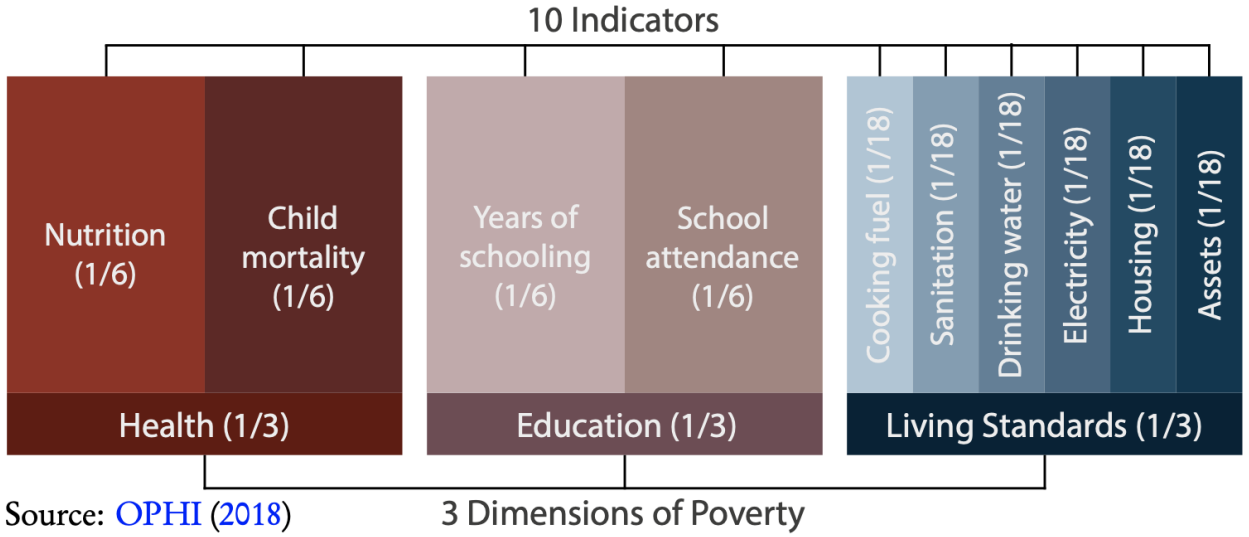
Research question:

What is the potential short-term impact of COVID-19 on multidimensional poverty at the global level?

Scope:

- Public action against the negative effects of COVID needed to take place – information was crucial
- We do not aim at explicitly accounting for national specificities – we aim for a global analysis
- We use nationally representative microdatasets for simulations for 97 countries – they were collected in different time periods

Figure 1. Structure of the Global MPI



Source: OPHI (2018)

- Poverty cutoff: 1/3
- $MPI = H \times A$
- Microdata was collected at different time points – to account for this we apply a projection methodology that requires two intertemporally harmonised cross-sections for each country
- Our aggregate COVID effects consider 70 countries

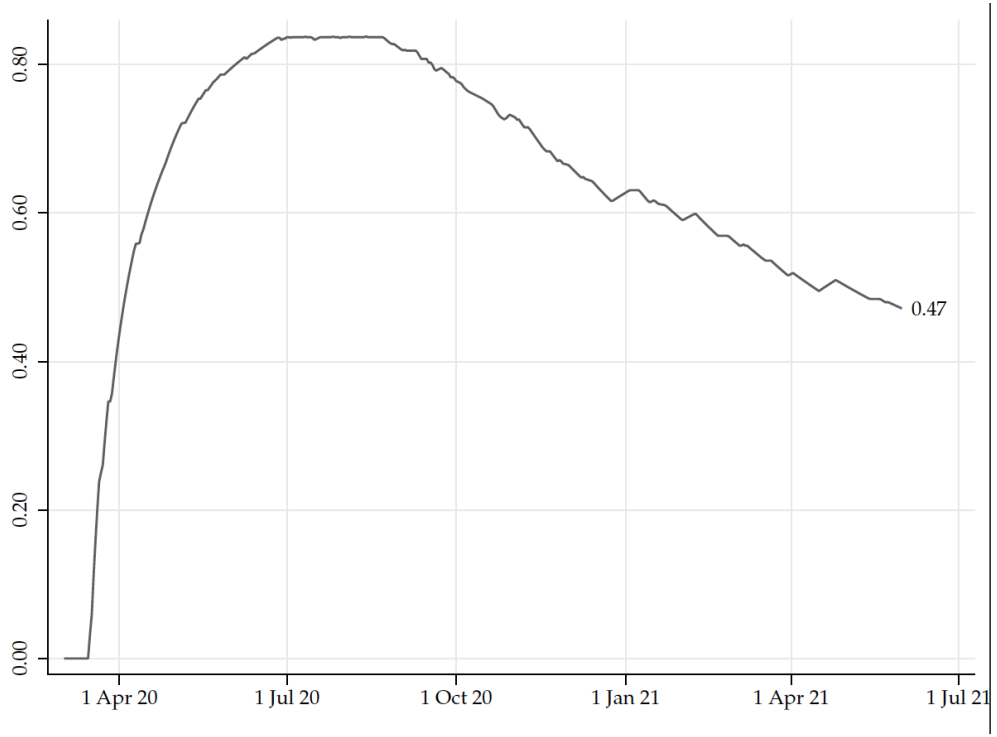
We implement simulations on two MPI indicators: nutrition and school attendance

Nutrition

- Scenarios informed by WFP measured risk of food insecurity.
- We assume that this risk materialises in actual malnutrition among the poor and vulnerable.
- Two data issues are covered:
  i) country selection in WFP analysis, which imperfectly overlap with global MPI countries
  → relative prevalence of nutrition deprivations in common countries compared to all global MPI as correction factor
  ii) within-country subpopulation selection in WFP analysis
  → alternative likelihoods of 12%, 20% and 50% of the poor and vulnerable to experience new nutrition deprivations.

School attendance

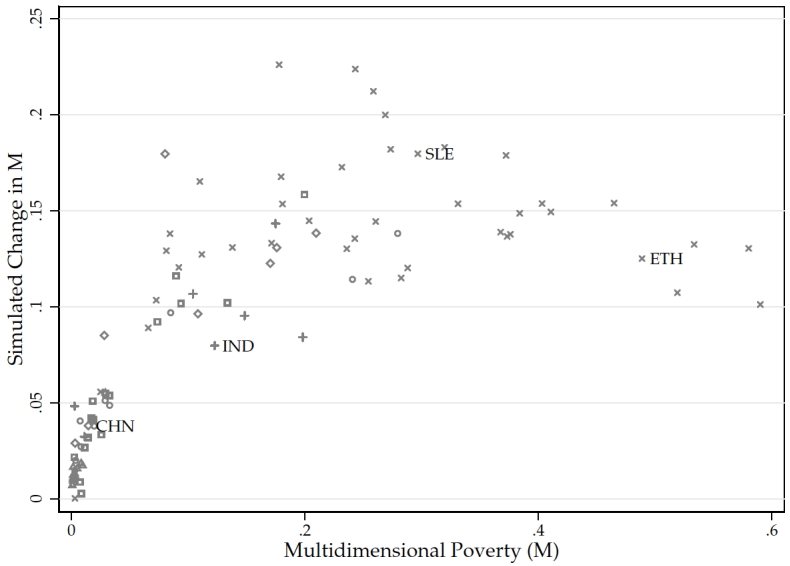
- Scenarios informed by UNESCO data on school closures.



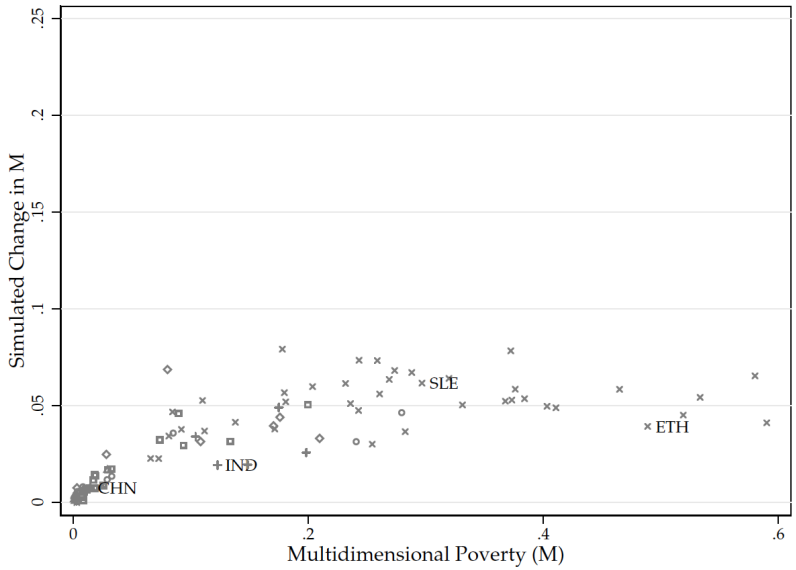
- *Loss of school measure*: share of days with closed schools in Mar/2020 - Jun/2021
- After the first year of the pandemic, some 50% of the scheduled classes have been cancelled (see also Azevedo et al., 2021)

Six simulated scenarios

Three correspond to nutrition shocks only (50%, 20%, 12%)
Three correspond to nutrition shocks combined with school attendance shock (50%)



50% nut. and 50% sch. att.



12% nut

We proceed in two steps:

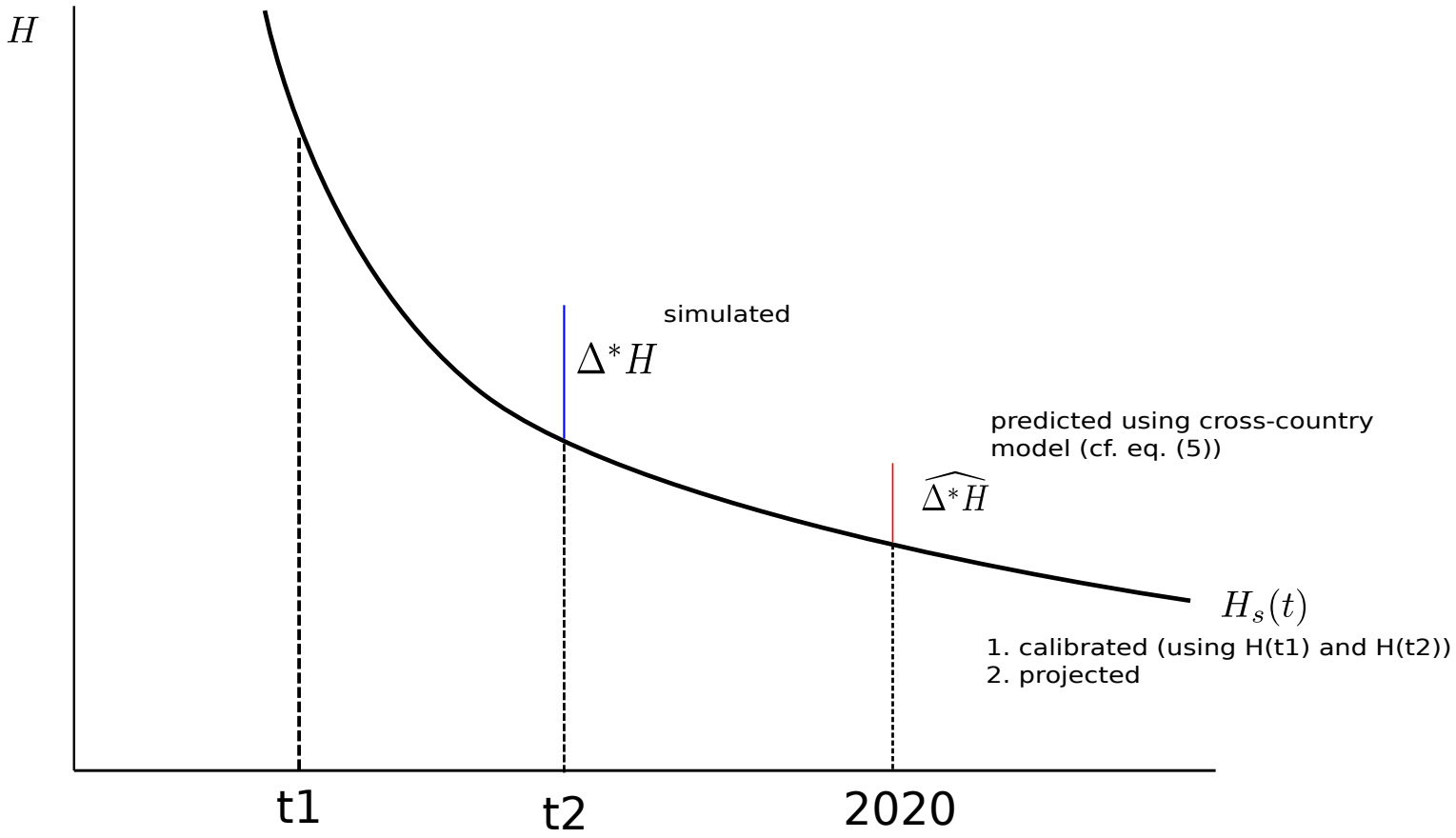
i) we nowcast multidimensional poverty to 2020 (ceteris paribus)

ii) we predict the country-specific impacts on MPI and H based on these nowcasts

Nowcasting

- With only two harmonised cross-sections per country, we calibrate *logistic* trajectories for H and A, and then deduce that of MPI.
- Importantly, theoretical bounds are respected

Methodological Approach



Predictive models (example)

$$\Delta^* H_s = \gamma_0 + \gamma_1 H_s + \gamma_2 H_s^2 + u_s$$

Calibrated model (example)

$$\widehat{\Delta^* H}_s(2020) = \hat{\phi}_s \left(\hat{\gamma}_0 + \hat{\gamma}_1 H_s(2020) + \hat{\gamma}_2 \left(H_s(2020) \right)^2 \right),$$

with

$$\hat{\phi}_s = \frac{\Delta^* H_s}{\Delta^* H_s - \hat{u}_s} = \frac{\Delta^* H_s}{\hat{\gamma}_0 + \hat{\gamma}_1 H_s + \hat{\gamma}_2 H_s^2}.$$

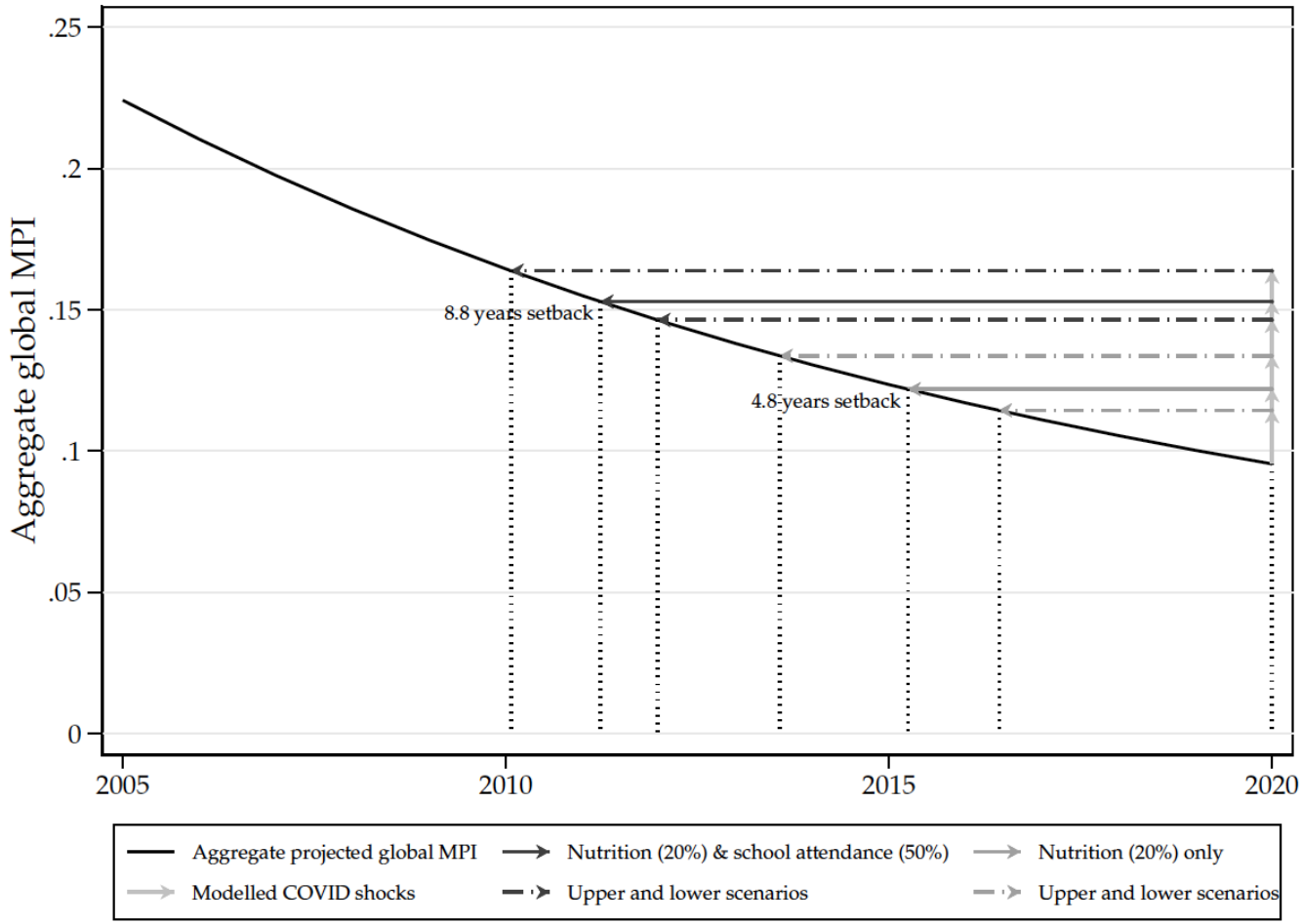

.25
.2
.15
.1
.05
0
Aggregate global MPI
8.8 years setback
4.8 years setback
2005
2010
2015
2020
Aggregate projected global MPI
Nutrition (20%) & school attendance (50%)
Nutrition (20%) only
Modelled COVID shocks
Upper and lower scenarios
Upper and lower scenarios

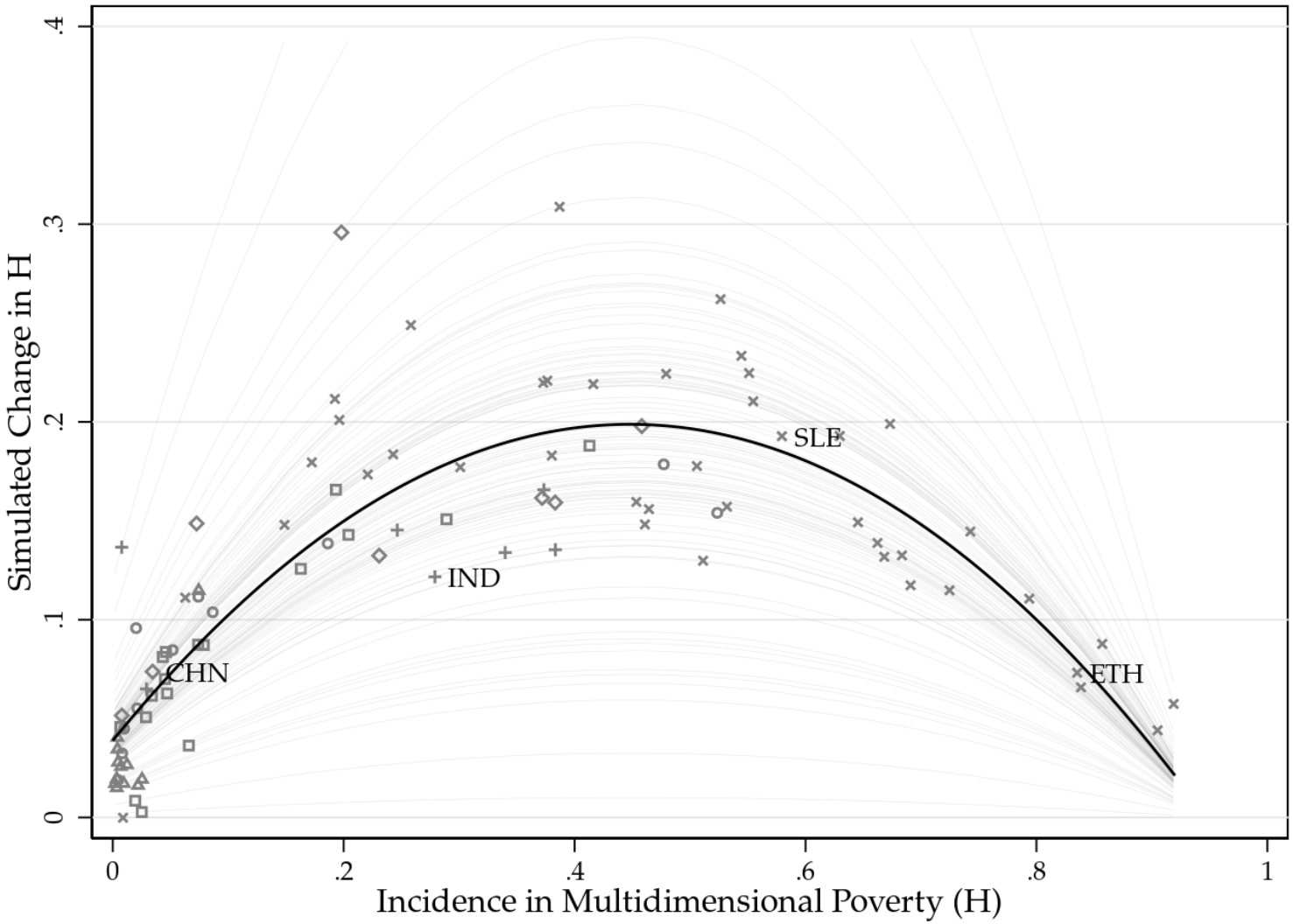
Table 2: Summary of Aggregate Results

COVID-19 scenario		Aggregate Adjusted Simulation for 2020		
Selection probabilities		MPI (M)	Δ # poor	Setback
Nutrition	School attendance	$\hat{M}^*_S(2020)$	$\Delta^*\hat{Q}_S(2020)$	$(2020 - t^*)$
(%)		value	(million)	(years)
12	–	0.114	152	3.6
20	–	0.122	213	4.8
50	–	0.134	310	6.4
12	50	0.146	426	8.0
20	50	0.153	469	8.8
50	50	0.164	547	9.9

Notes: Authors' calculations; MPI values are population-weighted aggregates across the 70 countries, while the increases in number of poor are totals across the same countries. All calculations based on UN-DESA medium-fertility population projections.

Concluding Remarks

- Information for effective policymaking is still missing. Yet policy action needs to take place!
- Short-term policies should make sure that the potential impacts that we find are not *persistent*.
- As more data become available, more fine-tuned region- and country-specific simulations can be performed
- Methodologically, our approach may be extended to other development indicators
- Ex-post evaluations will be crucial in the future.


Simulated Change in H
0
.1
.2
.3
.4
0
.2
.4
.6
.8
1
Incidence in Multidimensional Poverty (H)
CHN
IND
SLE
ETH