
بسم الله الرحمن الرحيم

Poverty as functioning deprivation: Global Estimates

By

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Introduction

- Conceptualization of poverty
- Choice of dimensions and indicators of poverty
- Methodology
- Gaps in existing literature

Conceptualization of poverty

- We define poverty as a deprivation of a number of functionings (actual achievements), considered vital but not equally important for human wellbeing, caused by an inadequate command over market or nonmarket resources.
- Capability space vs. functionings space

Dimensions of poverty

Functioning Poverty Index

- Reductionist
- More Comprehensive

FPI	MPI	HDI	HPI
Living a life of normal length	Heath	Life	Longevity
Adequate nourishment	Education	Education	Literacy
Healthy living	Living standard	Income	Living standard
Employment			
Literacy			
Clean household energy			
Economic freedom			
Political freedom			
Clean environment			

Choice of functionings: theoretical justification

- Choice of capabilities/ functionings based on perfectionist theory
- Perfectionism answers what constitutes human wellbeing independently of the subjective preferences of the individuals.
- Perfectionism is pragmatic
- History on the side of perfectionist approach:
  Aristotle, Ghazali, Shatibi, Nussbaum

Should a wholesome meal satisfy this father?

Man holds the hand of 8 years old child killed by a tsunami in India 2004

Dimensions of life not equally important

"Losses in human welfare linked to life expectancy, for example, cannot be compensated for by gains in other areas such as income or education" (UNDP, 2005).

Famine in Ethiopia: Does she need a job?

Weights as value-judgments: case for unequal weights

- Necessities, Needs, Embellishments
- Dimensions on which bare survival depends are more important
- Urgency of human needs: immediate vs. distant

<u>Is the deprivation of the three children equally severe?</u>

Hazardous household energy

≠

Child labor

≠

Malnutrition

Methodology

$$M = \begin{bmatrix} \left(\frac{\sum_{i \in S_1} I_{i,1}}{S_1}\right) & \left(\frac{\sum_{i \in S_1} I_{i,2}}{S_1}\right) & \cdots & \left(\frac{\sum_{i \in S_1} I_{i,193}}{S_1}\right) \\ \left(\frac{\sum_{i \in S_2} I_{i,1}^{D_2}}{S_2}\right) & \left(\frac{\sum_{i \in S_2} I_{i,2}^{D_2}}{S_2}\right) & \cdots & \left(\frac{\sum_{i \in S_2} I_{i,193}^{D_2}}{S_2}\right) \\ \vdots & \vdots & \ddots & \vdots \\ \left(\frac{\sum_{i \in S_9} I_{i,1}^{D_9}}{S_9}\right) & \left(\frac{\sum_{i \in S_9} I_{i,2}^{D_9}}{S_9}\right) & \cdots & \left(\frac{\sum_{i \in S_9} I_{i,193}^{D_9}}{S_9}\right) \end{bmatrix}$$

$$= \begin{bmatrix} \mu_{1,1} & \mu_{1,2} & \cdots & \mu_{1,193} \\ \mu_{2,1} & \mu_{2,2} & \cdots & \mu_{2,193} \\ \vdots & \vdots & \ddots & \vdots \\ \mu_{9,1} & \mu_{9,2} & \cdots & \mu_{9,193} \end{bmatrix}$$

Methodology

- So we propose to assign to dimension n-1 just enough weight that its 1st quartile $q_1(\mu_{n-1})$ equals the 3rd quartile $q_3(\mu_n)$of the nth dimension.
- $\mathbf{Q}(\theta_i)$ is a 9 x 1 vector of the ratios of the third and first quartiles of pairs of succeeding dimensions.
- $\mathbf{Q}(\theta_i) = \begin{pmatrix} \theta_1 \\ \theta_2 \\ \vdots \\ \theta_9 \end{pmatrix}$
- where
- $\theta_i = \frac{q_3(\mu_{i+1,j})}{q_1(\mu_{i,j})}$ for all $i = \{1, \dots, n-1\}$ and $\theta_n = 1$.
- NOTE: θ may take any value depending on an alternative normative judgment

Methodology

- As we have to make sure that a dimension θ_i gets sufficient weight so that its first quartile equals the third quartile of the dimension $\theta_{i+1,}$ we need to attach to the dimension θ_i the weight equal to the product of $\theta_{i+1}, \theta_{i+2} \ldots \theta_n$.

$$\omega_i = \prod_{i=i}^{n} \theta_i \text{ for all } i = \{1, \ldots, n\} \text{ and } \omega_n = 1$$

- Note that we assign no weight to the 9th dimension, $\theta_9 = \omega_9 = 1$. Ω is the 9 x 1 vector of ω_i which takes the product of the quartile ratios to compute the weights. The ω_9 in the following vector represents no weight while the ω_1 represents the highest weight.

$$\Omega = \begin{pmatrix} \omega_1 \\ \omega_2 \\ \vdots \\ \omega_9 \end{pmatrix}$$

Methodology

- The 9 x 1 column vector **Ω** thus represents the weights to be attached to the *9 x 193* matrix **M.** We create a *9 x 9* diagonal matrix **D** from the *9 x 1* column vector ω_i (entries of **Ω** are on the main diagonal (↘) and the entries off the main diagonal are all zero) and multiply it with *9 x 193* matrix **M** to get a 9 x 193 matrix **Ψ**. - Finally we get 1 x 193 row vector **Γ** by summing the 9 x 193 matrix **Ψ**.

$$\mathbf{\Psi} = \mathbf{D.M}$$

$$\mathbf{\Gamma} = \sum_{i=1}^{9} \mathbf{\Psi}_{i,j}$$

FPI: Poverty Estimates of some selected countries

	1990-2000		2001-2010		
Country	FPI. (%)	Rank	FPI (%)	Rank	Change (%)
Sierra Leone	100	1	90. 71	2	9. 29
Chad	94. 73	2	96. 52	1	-1. 79
Afghanistan	91. 02	3	85. 94	4	5. 08
Central African Republic	88. 52	4	87. 41	3	1. 11
Zambia	88. 46	5	79. 73	6	8. 73
Pakistan	**55. 19**	**43**	**49. 82**	**49**	**5. 36**
India	49. 56	55	42. 37	56	7. 19
United States of America	4. 07	187	2	186	2. 07
Canada	2. 85	190	0. 37	190	2. 48
Iceland	1. 01	191	-1. 47	193	2. 49
Switzerland	0. 88	192	-1. 29	192	2. 17
Japan	0	193	-0. 07	191	0. 07
World Average	**34. 84**		**31. 09**		**3. 75**

Note. The negative poverty in the three countries including Iceland, Switzerland and Japan in the period 2000-2010 shows that only these countries reduced their deprivation level relative to the deprivation level in Japan in the period 1990-2000.

Even if there is an overall decrease in poverty in every region of the world, it is still far cry from meeting the goals outlined in MDGs which seek to halve poverty in the world by 2015.

Comparison of FPI with $1.25 poverty line

- FPI in the world decreased by 3.75% from 1990-2000 to 2001-2010.
- World Bank estimated that there was a decline of around 30% in the extreme poverty. Almost 50% of the population of the world was below the $1.25 poverty line in 1981 which decreased to 21% in 2010.
- The number of people living on less than $1.25 per day has decreased dramatically in the past three decades, from half the citizens in the developing world in 1981 to 21 percent in 2010, despite a 59 percent increase in the developing world population (World Bank).

Pakistan	**2009**	**2010**	**2011**	**2012**
PPP conversion factor for Pakistan	0.4	0.4	0.5	0.5
Pakistan's exchange rate	81.71	85.19	86.34	93.4
$1.25 poverty line in Pakistan rupee terms	32.684	34.076	43.17	46.7

Purchasing power parity conversion factor

- Purchasing power parity conversion factor is the number of units of a country's currency required to buy the same amount of goods and services in the domestic market as a U.S. dollar would buy in the United States. The ratio of PPP conversion factor to market exchange rate is the result obtained by dividing the PPP conversion factor by the market exchange rate. The ratio, also referred to as the national price level, makes it possible to compare the cost of the bundle of goods that make up gross domestic product (GDP) across countries. It tells how many dollars are needed to buy a dollar's worth of goods in the country as compared to the United States.

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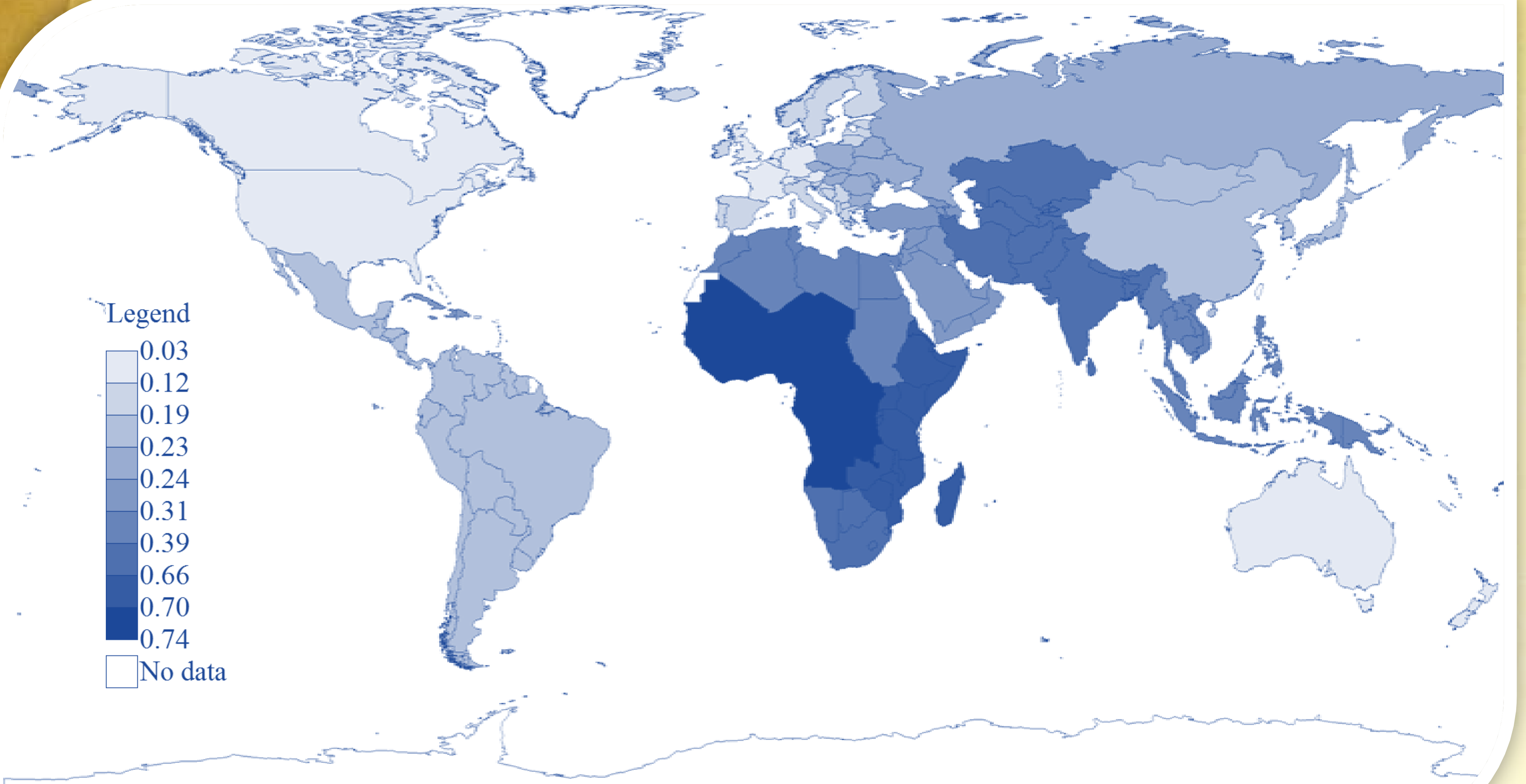
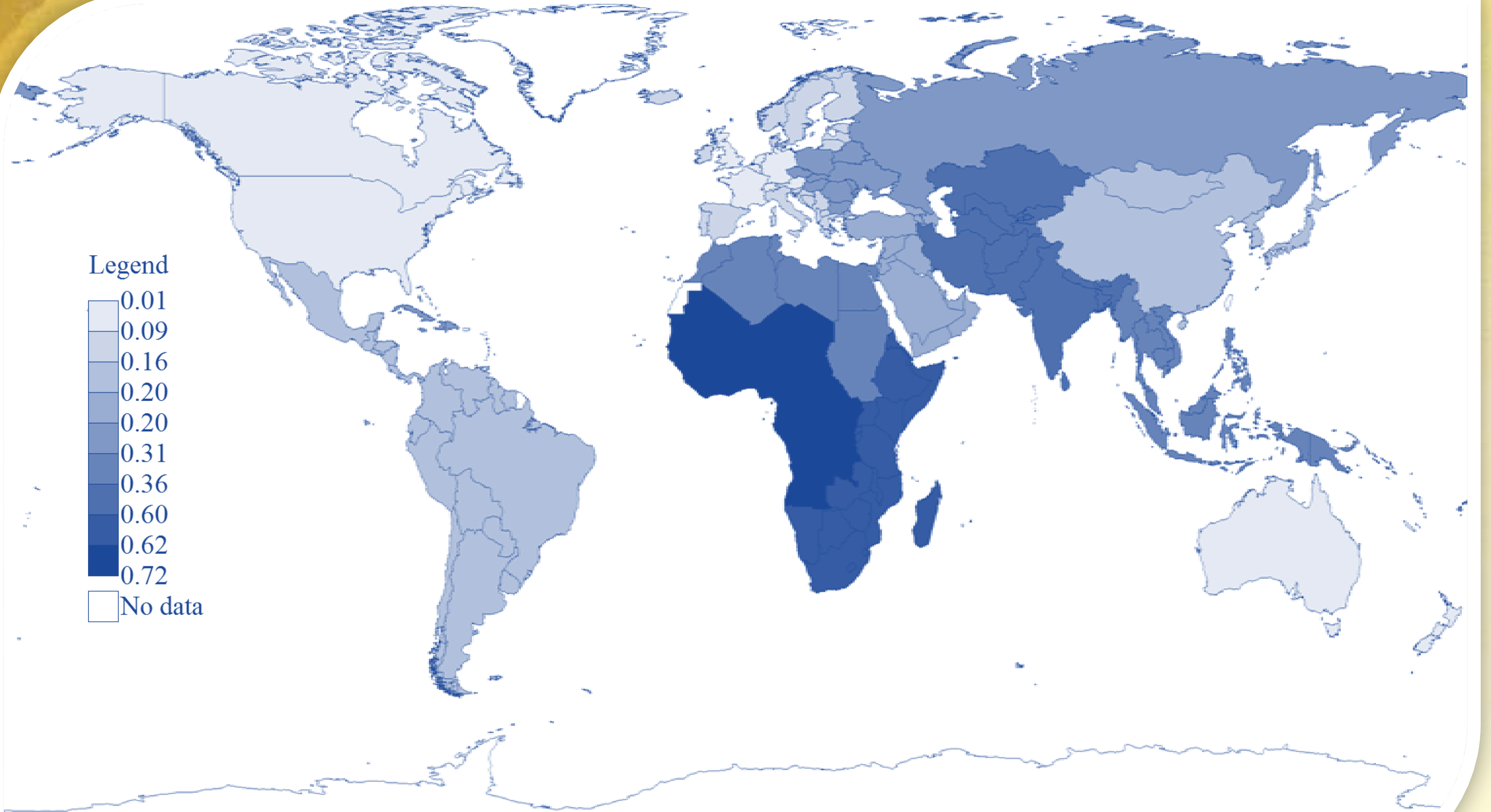
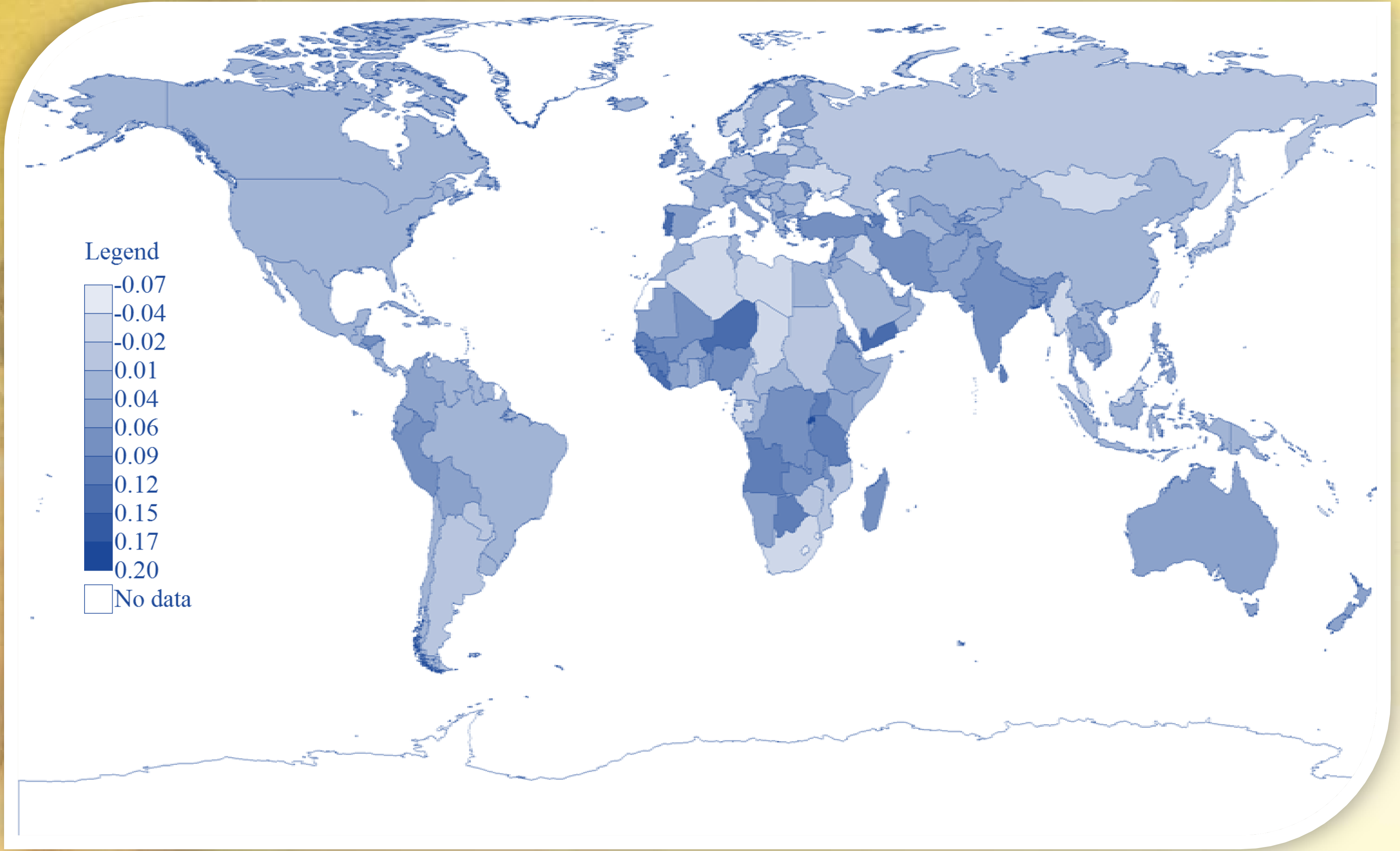


Regional distribution of poverty during 1990-2000



Regional distribution of poverty during 2001-2010

Change in Functioning Poverty over a decade



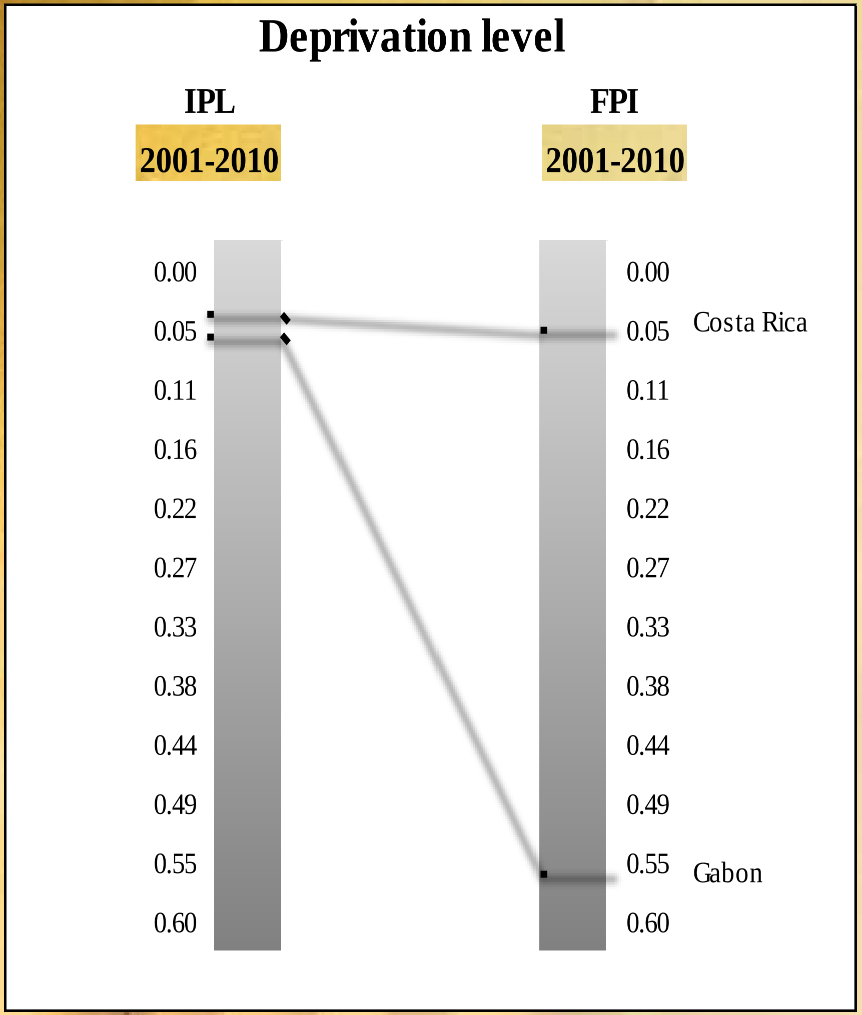
The negative poverty in the three countries including Iceland, Switzerland and Japan in the period 2000-2010 shows that only these countries reduced their deprivation level relative to the deprivation level in Japan in the period 1990-2000.

Paternalism & arbitrariness: nemesis of the composite indices?

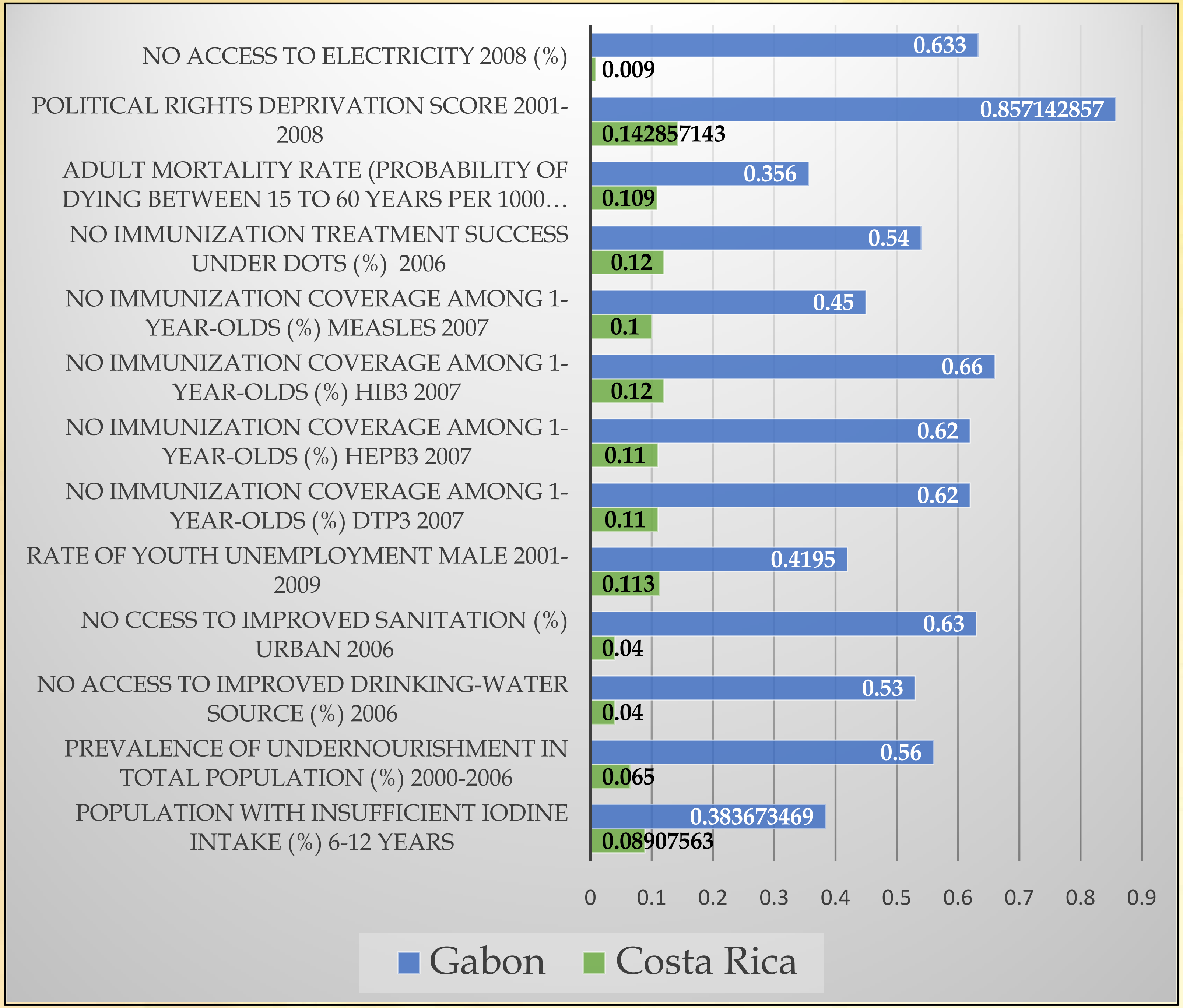
- Paternalism not necessarily incompatible with theories of wellbeing (Zamir, 1998)
- Level of generality in the definition of wellbeing: local specification vs. plural specification (Clark, 2002)

Comparing FPI with other measures

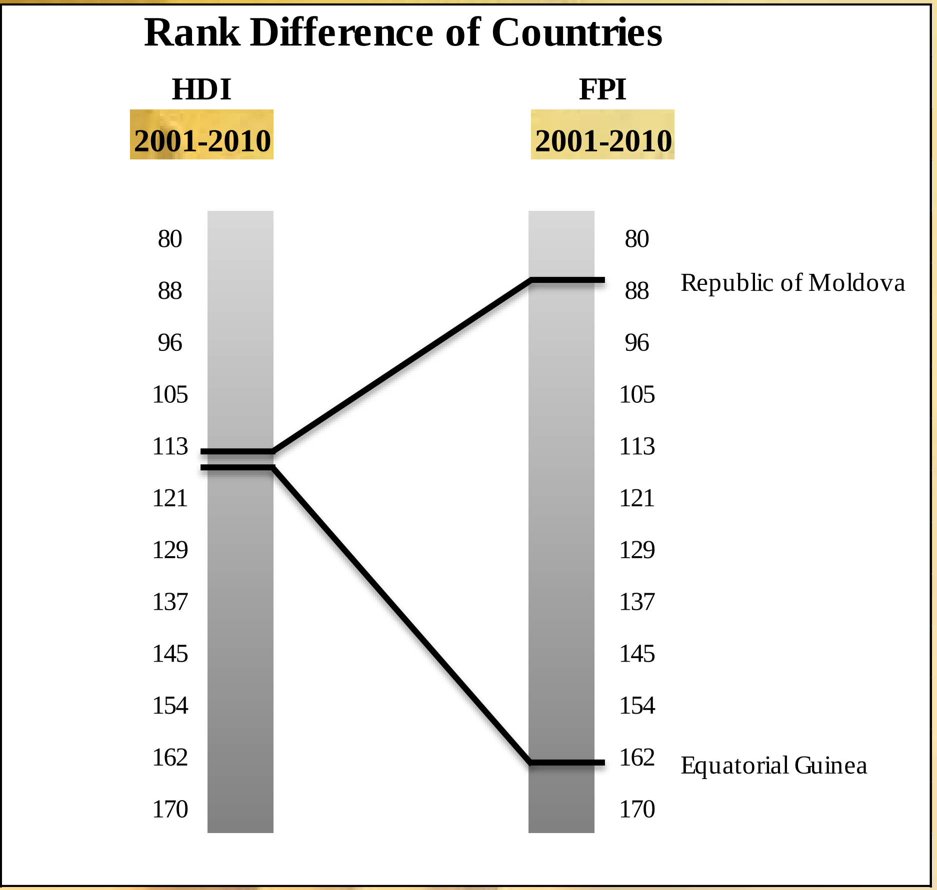
- Composite measures necessarily loose information
- Excluding relevant indicators of wellbeing leads to implausible poverty statistics

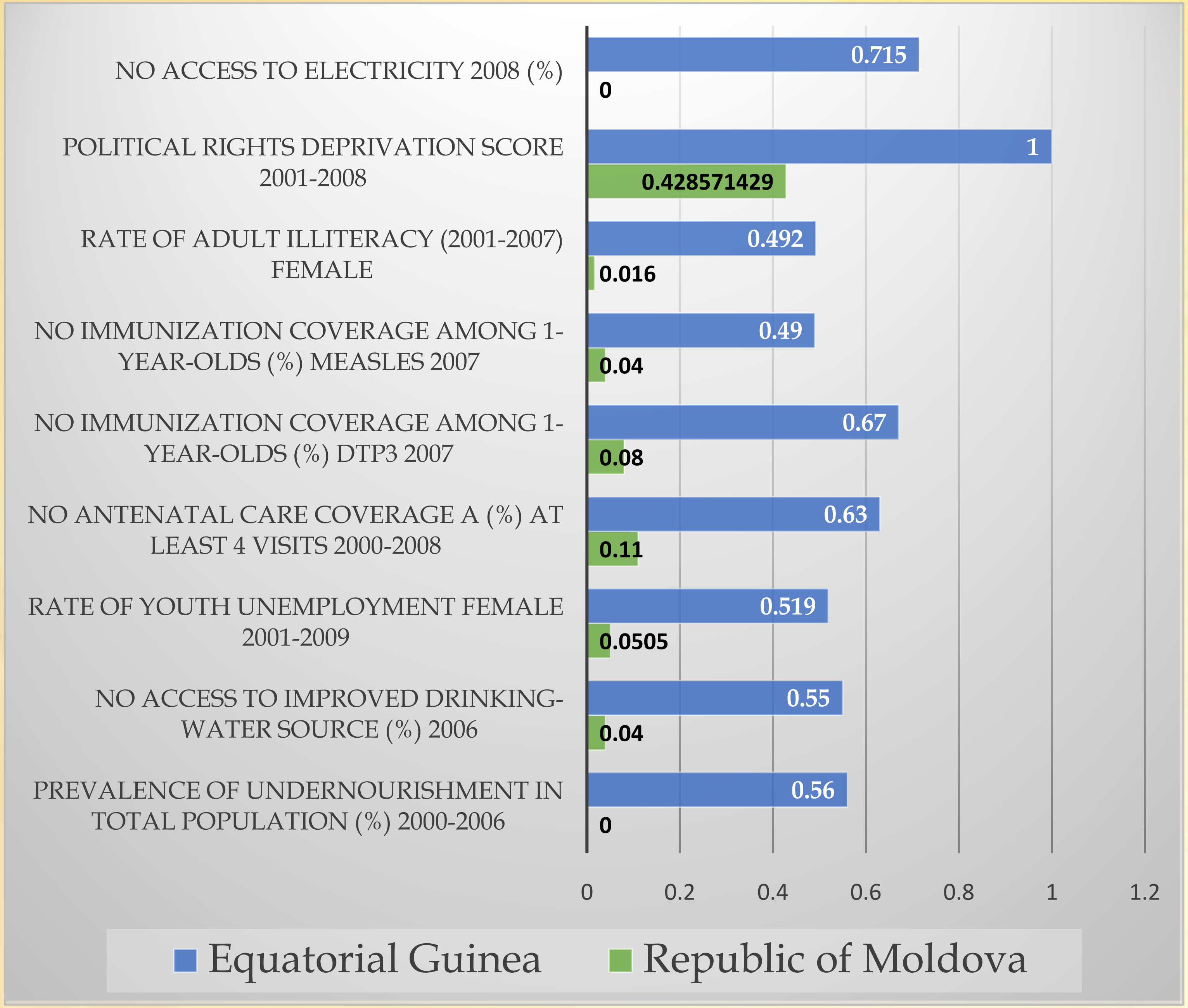


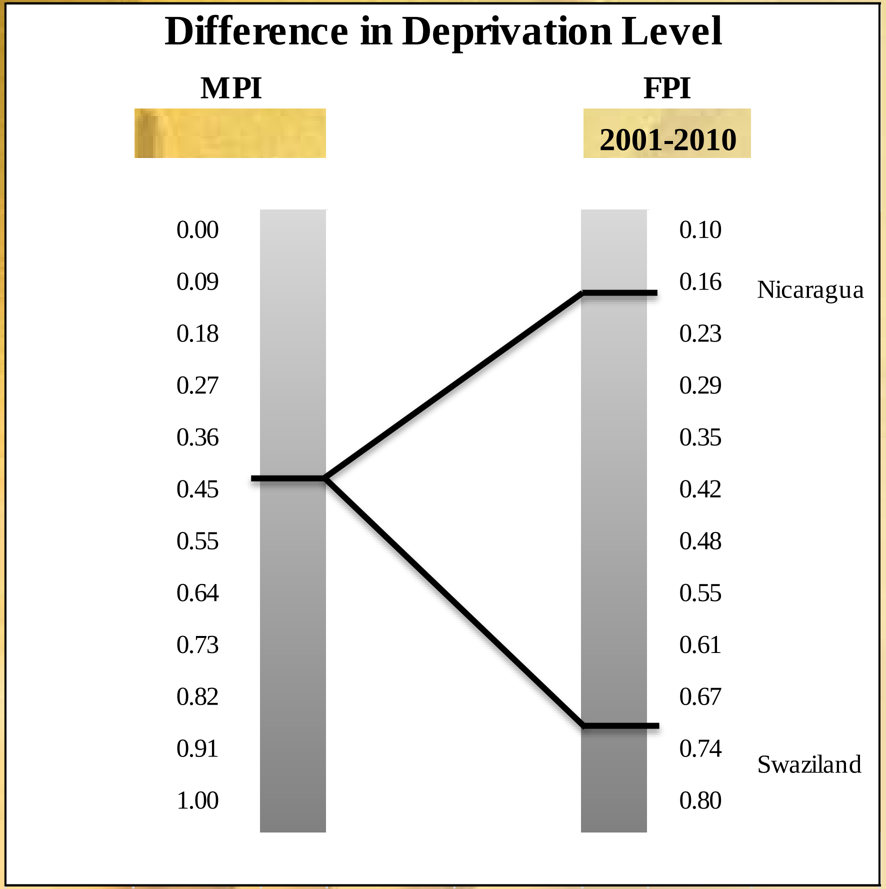
Deprivation level
IPL
2001-2010
FPI
2001-2010
0.00
0.05
0.11
0.16
0.22
0.27
0.33
0.38
0.44
0.49
0.55
0.60
Costa Rica
Gabon



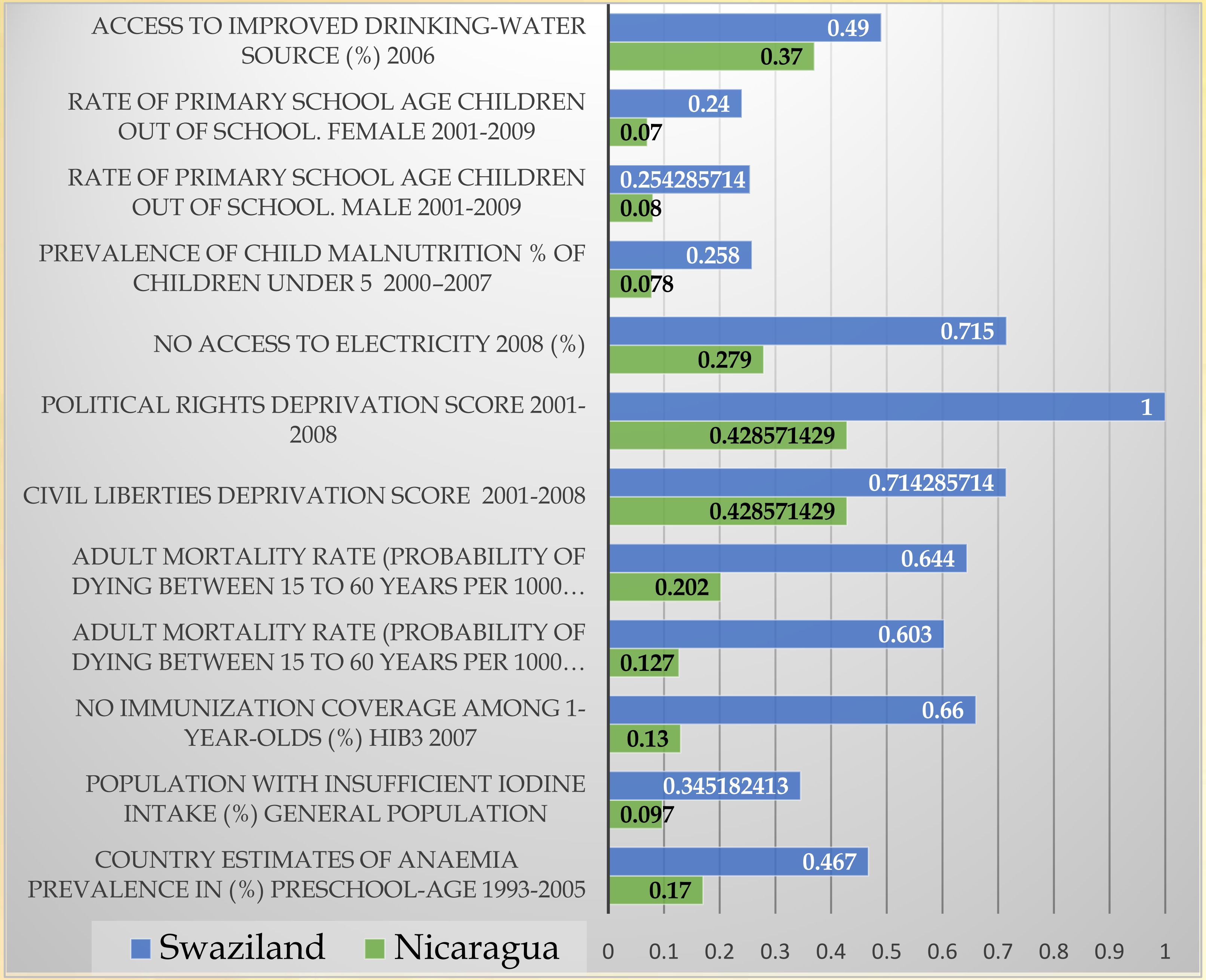
NO ACCESS TO ELECTRICITY 2008 (%)
0.633
0.009
POLITICAL RIGHTS DEPRIVATION SCORE 2001-2008
0.857142857
0.142857143
ADULT MORTALITY RATE (PROBABILITY OF DYING BETWEEN 15 TO 60 YEARS PER 1000…
0.356
0.109
NO IMMUNIZATION TREATMENT SUCCESS UNDER DOTS (%) 2006
0.54
0.12
NO IMMUNIZATION COVERAGE AMONG 1-YEAR-OLDS (%) MEASLES 2007
0.45
0.1
NO IMMUNIZATION COVERAGE AMONG 1-YEAR-OLDS (%) HIB3 2007
0.66
0.12
NO IMMUNIZATION COVERAGE AMONG 1-YEAR-OLDS (%) HEPB3 2007
0.62
0.11
NO IMMUNIZATION COVERAGE AMONG 1-YEAR-OLDS (%) DTP3 2007
0.62
0.11
RATE OF YOUTH UNEMPLOYMENT MALE 2001-2009
0.4195
0.113
NO CCESS TO IMPROVED SANITATION (%) URBAN 2006
0.63
0.04
NO ACCESS TO IMPROVED DRINKING-WATER SOURCE (%) 2006
0.53
0.04
PREVALENCE OF UNDERNOURISHMENT IN TOTAL POPULATION (%) 2000-2006
0.56
0.065
POPULATION WITH INSUFFICIENT IODINE INTAKE (%) 6-12 YEARS
0.383673469
0.08907563
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
Gabon
Costa Rica


Rank Difference of Countries
HDI
2001-2010
FPI
2001-2010
80
88
96
105
113
121
129
137
145
154
162
170
Republic of Moldova
Equatorial Guinea


NO ACCESS TO ELECTRICITY 2008 (%)
0.715
0
POLITICAL RIGHTS DEPRIVATION SCORE 2001-2008
1
0.428571429
RATE OF ADULT ILLITERACY (2001-2007) FEMALE
0.492
0.016
NO IMMUNIZATION COVERAGE AMONG 1-YEAR-OLDS (%) MEASLES 2007
0.49
0.04
NO IMMUNIZATION COVERAGE AMONG 1-YEAR-OLDS (%) DTP3 2007
0.67
0.08
NO ANTENATAL CARE COVERAGE A (%) AT LEAST 4 VISITS 2000-2008
0.63
0.11
RATE OF YOUTH UNEMPLOYMENT FEMALE 2001-2009
0.519
0.0505
NO ACCESS TO IMPROVED DRINKING-WATER SOURCE (%) 2006
0.55
0.04
PREVALENCE OF UNDERNOURISHMENT IN TOTAL POPULATION (%) 2000-2006
0.56
0
0
0.2
0.4
0.6
0.8
1
1.2
Equatorial Guinea
Republic of Moldova



Difference in Deprivation Level
MPI
FPI
2001-2010
0.00
0.09
0.18
0.27
0.36
0.45
0.55
0.64
0.73
0.82
0.91
1.00
0.10
0.16
0.23
0.29
0.35
0.42
0.48
0.55
0.61
0.67
0.74
0.80
Nicaragua
Swaziland



ACCESS TO IMPROVED DRINKING-WATER SOURCE (%) 2006
0.49
0.37
RATE OF PRIMARY SCHOOL AGE CHILDREN OUT OF SCHOOL. FEMALE 2001-2009
0.24
0.07
RATE OF PRIMARY SCHOOL AGE CHILDREN OUT OF SCHOOL. MALE 2001-2009
0.254285714
0.08
PREVALENCE OF CHILD MALNUTRITION % OF CHILDREN UNDER 5 2000–2007
0.258
0.078
NO ACCESS TO ELECTRICITY 2008 (%)
0.715
0.279
POLITICAL RIGHTS DEPRIVATION SCORE 2001-2008
1
0.428571429
CIVIL LIBERTIES DEPRIVATION SCORE 2001-2008
0.714285714
0.428571429
ADULT MORTALITY RATE (PROBABILITY OF DYING BETWEEN 15 TO 60 YEARS PER 1000…
0.644
0.202
ADULT MORTALITY RATE (PROBABILITY OF DYING BETWEEN 15 TO 60 YEARS PER 1000…
0.603
0.127
NO IMMUNIZATION COVERAGE AMONG 1-YEAR-OLDS (%) HIB3 2007
0.66
0.13
POPULATION WITH INSUFFICIENT IODINE INTAKE (%) GENERAL POPULATION
0.345182413
0.097
COUNTRY ESTIMATES OF ANAEMIA PREVALENCE IN (%) PRESCHOOL-AGE 1993-2005
0.467
0.17
Swaziland
Nicaragua
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1

Thank you