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# Relational Capability Index 2.0

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Gaël GIRAUD <sup>a</sup>

Rakesh GUPTA N. R. <sup>b</sup>

Cécile RENOUARD <sup>c</sup>

Thomas ROCA <sup>d</sup>

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**Contact at AFD:**

Thomas ROCA (rocat@afd.fr)

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<sup>a</sup> Paris School of Economics; C.N.R.S. (French National Center for Scientific Research); University of Paris 1 Panthéon-Sorbonne.

<sup>b</sup> Paris School of Economics; ESSEC Business School; University of Paris 1 Panthéon-Sorbonne.

<sup>c</sup> ESSEC Business School.

<sup>d</sup> Agence Française de Développement.

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## **Relational Capability Index 2.0**

Gaël GIRAUD, Paris School of Economics; C.N.R.S. (French National Center for Scientific Research); University of Paris 1 Panthéon-Sorbonne.

Rakesh GUPTA N. R., Paris School of Economics; ESSEC Business School; University of Paris 1 Panthéon-Sorbonne.

Cécile RENOUARD, ESSEC Business School.

Thomas ROCA, Agence Française de Développement.

### **Summary**

Relational Capabilities, as introduced by Giraud et al. (2013) aims to introduce social capital and social inclusion in the capabilities paradigm. This paper presents RCI 2.0, an alternative version of the Relational Capability Index (RCI). It is tailored for long-run monitoring of a country's performance and cross-country comparison. It gives due consideration to the critics on aggregation methods that applies to multidimensional development indicators or 'composite' indexes. For the first time, we use the Gallup World Poll database. The richness of the database allows disintegrating the RCI 2.0 into different groups: rural vs. urban, by gender, and by income levels - across the world - decoupling the possibility of analysis. Our results verify second order stochastic dominance across all the aforementioned groups when weighted by population size. We also find RCI 2.0 to be strongly correlated to the Human Development Index and income levels in our sample of countries.

**Keywords:** Relational capabilities, comparison of indexes, social cohesion, human development, social capital, capability approach.

**JEL Classification:** D63, O15.

**Original version:** English.

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# 1 Introduction

This paper draws upon Giraud et al. (2013) to provide an alternative indicator, time and space comparable, available for a larger set of countries and disintegrated by region (urban vs. rural), gender (male vs female) and income levels. It is conceived to facilitate direct comparisons with the Human Development Index (HDI) and other multidimensional indexes. This version, RCI 2.0, takes stock of several critics addressed towards multidimensional human development indicators which we will discuss in the following sections.

The capability approach, popularized by Sen (Sen (1976), Sen (1979), Sen (1985), Sen (1989)), along with others (Alkire (2005), Nussbaum (1988), Robeyns (2003)), has helped make great strides towards a holistic approach of human development, vision promoted by the United Nations Development Programme (UNDP) in their Human Development Reports (HDR) and synthesized in the Human Development Index (HDI). Nevertheless, Mahbub ul Haq's operationalization of Sen's framework<sup>1</sup> leaves behind the "political" dimensions of the capability approach, whether it is understood as "organization of the city" or "living together".

The choice of the three dimensions included in the HDI was a pragmatic answer to a strong set of constraints. Conceived as an advocacy tool to promote people centered development<sup>23</sup>, the HDI had to be simple and meet a consensus. The universal recognition of health, education and living conditions as core dimensions of human rights thus shaped its content, so as data availability and comparability. Since its inception and aware of its limitation, HDI's initiators underlined the importance of focusing on other human capabilities.

The Relational Capability Index aims at addressing one of HDI's missing dimension by focusing on the quality of relationships among people and on their level of relational empowerment. The conceptual and the philosophical roots of such a measurement concept, as well as its methodological challenges are discussed in Giraud et al. (2013).

To put it briefly, there are two central reasons for an approach towards constructing and monitoring a relational capability index. First, in the social capital approach,

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<sup>1</sup> refer to UNDP (1990)

<sup>2</sup> see the discussion in one of the earlier papers by Anand, S. and Sen, A.K. (1993), Human Development Index: Methodology and Measurement. HDRO Occasional Paper. New York: UNDP.

<sup>3</sup> Cf. Desai (1991)

social interactions are instrumental, devoid of ethical considerations as social relationships are not seen as an accomplishment and a good in itself. In this accumulation perspective, social capital is considered an asset “against” other people, in a generalized competition framework. It primarily falls short of acknowledging a complete understanding of functionings and outcomes of social interconnection. Our view is to equate the cohesive ties or social connectedness with (creating) an environment that facilitates trust and cooperation among actors. The resulting environment has a proliferating effect, under certain conditions. Obviously, there are numerous situations which are quite ambiguous and require a deeper analysis, as it is the case with any public good.

Second and most importantly, our approach is entrenched into Sen’s capability view (Sen (2009)) insofar as complementing Rawls’ view (Rawls (1971)): the maximin is better applied to the capabilities and functionings than to the rights and resources of people - different people who have the same resources won’t be equally able to transform their abilities into functionings. But the first two principles of Rawls apply: a fair society has to provide all its citizens with an equal set of freedoms and to make sure they will be equally entitled to develop themselves. Our index then builds on Nussbaum’s perspective concerning the central capabilities: we defend the idea that a certain minimum threshold has to be provided for<sup>4</sup>. Finally, because exclusion is a relational concept, it cannot be measured only in absolute terms, thus, it also needs to be assessed in relative terms, as in Laderchi, Saith, and Stewart (2003): exclusion may be due to structural characteristics of societies that lead to certain deprivations for some individuals and groups.

Our approach therefore puts social networks central to the conception of human development but, at the same time, acknowledges the diversity of personal and collective values and specific ends. Defending the view that inclusion is inseparable from social cohesion, we understand relational capabilities as a way towards more inclusive societies. Symmetrically, exclusion is to be regarded as the inverse of inclusion, hence, an expression of the failure of the development process. The three dimensions of the relational capabilities we distinguish are given below<sup>5</sup>:

1. To be integrated into networks;
2. To have specific attachments to others, including friendship and love;
3. To commit to a project within a group: which aims at serving a common good or a social interest, to take part in decision-making in a political society.

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<sup>4</sup> This is the original conception of the RCI - which is different from RCI 2.0, for reasons presented in the next section.

<sup>5</sup> A detailed discussion to be found in Renouard (2011).

As a reminder, the following table provides information on the questions and thresholds (cutoffs) used to construct the original RCI.

Table 1: Relational Capability Index: Dimensions and components

<b>Dimensions</b>	<b>Components</b>	<b>Deprived if</b>
<b>Integration to network</b>	Employment status	No stable job with regular professional relations
	Access to transport	No means of transport
	Access to telecommunications	Does not use a phone, a computer or the internet
	Access to information	Does not obtain news from radio, television or newspaper
<b>Private relations</b>	No. of people in the HH	Lives alone
	Family ties	No trust in family
	Close friends	No close friends providing psychological & emotional support
	Financial support	No financial support from relatives or acquaintances
<b>Civic commitment</b>	Trust in the community	No trust in people the individual knows
	Membership	No active membership in a group
	Collective action	No participation in political action
	Vote	Does not vote
	Solidarity	No active membership in common interest group
Trust in others	No trust in unknown people	

## 2 Relational Capability Index 2.0

In this section, we discuss in detail the introduction of RCI 2.0. We put RCI 2.0 in the forefront of our multidimensional relational capabilities index in the perspective of cross-country comparison over time and disintegration.

In the literature, we found two ways of computing multidimensional indexes related to human development. The normative computation is the most frequently used (including the Multidimensional Poverty Index (MPI)). This major strand of literature has been particularly inspired by the Alkire and Foster (2011) method. It consists of an arithmetical aggregation of poverty - or development dimensions - that are theoretically laid out. Each dimension is a weighted average of components, and is also weighted in the final computation of the index. For example in the case of the MPI, each component represents one aspect of deprivation. Naturally, identifying the poor first requires the definition of a poverty cutoff. In the MPI, a deprivation cut off is defined for each component. The index is then computed as an average (a certain mean) across dimensions. Second, a dimensional cutoff is defined: an individual is considered non-poor when his index is higher than a poverty line.

A data-driven index is the other direction. One might differentiate data driven indexes based on cardinal information from data-driven indexes based on ordinal information. The former are primarily built using data analysis processes, which can be distinguished into two subsets: descriptive and explanatory models. The latter is used to build a composite index implementing a ranking approach of several development indicators with a certain aggregation method.

The primary aim of our RCI is comparative; thus, we chose the normative approach. Three main reasons guided us towards moving away from the rich aggregation methods presented in the original paper<sup>6</sup> to this version RCI 2.0. First, within a deprivation approach, thresholds are necessary to identify who is “relationally poor”. However, defining theoretically grounded cutoffs, consistent for every society, is a very ambitious objective, probably not achievable, or at least subject to debates that can hardly be conclusive. Second, deriving a micro vs. macro interpretability from the data in use in RCI 1.0 seems hazardous.

Finally, with RCI 2.0, we pledge for an imperfect substitutability of RCI dimensions and thus to reconsider the use of the arithmetic mean.

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<sup>6</sup> refer to page 23 of Giraud et al. (2013) - Utilitarian, Geometric and Rawlsian.

The choice of cutoffs renders comparability across countries difficult. Although at the inception of the indicator, the careful choice of *if an individual is deprived in relational capability sense* seemed robust theoretically, in practice, data constraints exposed some of the shortcomings. For instance, the voting behavior component of the civic commitment dimension which is to represent the ability of an individual who can take control of his own political destiny. A deprivation of this right automatically induces a relational deprivation. Furthermore, there are also instances where a person even granted with this right chooses not to use it or is indifferent in the political participative processes of a democracy; this phenomenon is often referred to as disenchantment - Gauchet (2005). RCI wants to capture these two aspects and ascertain if a person is deprived in a relational capability sense. We noticed that in several countries of Latin America and in Belgium, for example, voting in the elections is mandatory, attracting prosecution of a certain form, otherwise. This is an antithesis to what RCI ideally wants to capture.

Another example is the “Lives alone” component of the private relations dimension. There is a demographic glitch where we find that in some countries a sizable proportion of youth are living alone during their higher education (say between 18 and 26 years of age). They are not necessarily deprived of emotional support, love and friendship. Hence, irrespective of the choice of cutoff, it tends to produce biased results. In other words, ranks some countries favorably (or otherwise) over other countries<sup>7</sup>.

The second criticism is concerned with the aggregation method of relational capabilities. The average of capabilities (and not deprivations) renders cross-country comparisons easy. We definitely do not intend to discount the deprivations approach of RCI<sup>8</sup>, but a macro versus micro interpretation is difficult to conceive, since it raises several questions given the non-linearity of links between income levels, inequality and social cohesion.

Lastly, the RCI 2.0 methodology addresses, and disagrees on the perfect substitutability property of an arithmetic mean. In the interest of holistic human existence as a developmental prerequisite, the three dimensions of relational capabilities index are the three central pillars of individual’s capabilities, and hence, not freely substitutable. This is why a geometric mean which allows for such aggregation is used at the dimensional level ( $D_k$ ). However, we allow for the perfect

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<sup>7</sup> We want to remind that the data (dimensions or components) is defined as a proportion of people in a given country. This, in our opinion, does not override the cutoffs-free argument since this is independent of indicator constructor’s choices.

<sup>8</sup> In our opinion, the deprivations approach is appropriate for microanalysis with individual or household level data.



substitutability at the component level ( $a_i$ ). The latter is similar to the original RCI and we intend to preserve this approach.

Finally, the criticisms provided by Ravallion (2012) towards the HDI, also applying to other multidimensional indicators, doesn't affect RCI or RCI 2.0. Indeed, the supposed perverse trade-offs acknowledged by Ravallion, arise from the inclusion of a monetary measure as a dimension/component in the construction of a composite indicator, which is not the case in the RCI or RCI 2.0.

Nonetheless, as we'll notice in the data section, the information gathered through the Gallup word poll cannot possibly, at the moment, solve all the problems.

## 3 Data and results

### 3.1 Data

For the first time we use the *Gallup World Poll*. These surveys provide rich information on social, political and economic atmosphere of most of the countries over the world, making the World Poll, one of the most complete databases of households' perceptions available nowadays. Most importantly, the surveys are aimed at obtaining a public opinion, at a mass level, on political and policy-relevant questions. These are similar to the Global Barometers Surveys<sup>9</sup> and World Values Surveys (WVS)<sup>10</sup> or the European Values Study (EVS)<sup>11</sup>, however, Gallup surveys are conducted on a yearly basis, whereas the previously mentioned databases are less frequently updated (e.g. every 5 years for the World Value Surveys).

Table 2 provides information on the questions or variables retained in the construction of the RCI 2.0. The information pertains to the year 2012, which is the latest available relevant year for our study.

We verify whether there is redundancy of information from the components used in the construction of RCI 2.0 with the 'new' Gallup World Poll dataset. From the following two correlation matrices (listwise and pairwise - refer to tables 3 and 4 respectively), we can confirm that the information each variable brings to

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<sup>9</sup> <http://www.jdsurvey.net/gbs/gbs.jsp>

<sup>10</sup> <http://www.worldvaluessurvey.org/wvs.jsp>

<sup>11</sup> <http://www.europeanvaluesstudy.eu/>

Table 2: Relational Capability Index 2.0: Dimensions and components (Gallup)

<b>Dimensions</b>	<b>Components</b>	<b>Capabilities</b>
<b>Integration to network</b>	Employment status (emp)	Stable job (full time for an employer, full time self-employed, and part time do not want full time)
	Access to transport	- missing -
	Access to telecommunications (tele)	Max. of possessions by proportion of HH at the country level - Internet, landline telephone or cellular phone
	Access to information (info)	Does your home have a television?
<b>Private relations</b>	No. of people in the HH	- missing -
	Family ties	- missing -
	Close friends (1) (friend)	If you were in trouble, do you have relatives or friends you can count on to help?
	Close friends (2) (friend)	Are you satisfied with your city in - opportunities to meet people and make friends?
	Financial support (support)	In the last year, Receive Money or Goods AND Sent Financial Help?
	Trust in the community (trust-comm)	In the last month, have you helped a stranger who needed help?
<b>Civic commitment</b>	Membership	- missing -
	Collective action (collective)	In the past month, have you voiced opinion to an official?
	Vote	- missing -
	Solidarity (1)	In the past month, have you volunteered your time?
	Solidarity (2)	In the past month, have you donated money to a charity?
	Trust in others (safe)	Feel safe while walking in your area?

*Note 1:* The deprivation cutoffs are not present in RCI 2.0.

*Note 2:* The answers to the questions are available as the % of the population declaring as agreeing.

the RCI 2.0 is rather unique i.e., the variables are weakly correlated with each other (pairwise correlation score ranging from 0.02 to 0.49). Hence, they are not substitutes or redundant.

When we look closely at the correlation matrix tables, we see that there are three pairs of variables that are among the most correlated: the two solidarity variables (*solidarity (1) and solidarity (2)*); *solidarity (1)* and trust in the community variable (*trustcomm*); and *solidarity (2)* and *trustcomm* variable.

Table 3: Correlation matrix of all the components of RCI 2.0

	emp	tele	info	friends	support	finance	trustcomm	collective	solidarity1	solidarity2	safe
emp	1.00										
tele	-0.01	1.00									
info	-0.05	0.72	1.00								
friends	0.33	0.18	0.18	1.00							
support	0.32	0.41	0.46	0.43	1.00						
finance	-0.01	-0.32	-0.47	-0.15	-0.13	1.00					
trustcomm	0.02	-0.07	-0.10	0.18	0.09	0.41	1.00				
collective	0.21	0.02	0.00	0.33	0.38	0.31	0.49	1.00			
solidarity1	0.32	-0.01	-0.01	0.28	0.31	0.28	0.49	0.42	1.00		
solidarity2	0.35	0.23	0.24	0.45	0.41	0.11	0.34	0.38	0.56	1.00	
safe	0.13	0.18	0.14	0.26	0.10	-0.11	0.01	0.02	0.14	0.41	1.00

Table 4: Pairwise correlation matrix of all the components of RCI 2.0

	emp	tele	info	friends	support	finance	trustcomm	collective	solidarity1	solidarity2	safe
emp	1.00										
tele	0.10	1.00									
info	0.05	0.70	1.00								
friends	0.35	0.25	0.22	1.00							
support	0.31	0.45	0.48	0.42	1.00						
finance	-0.04	-0.28	-0.45	-0.15	-0.12	1.00					
trustcomm	0.03	-0.05	-0.13	0.22	0.16	0.39	1.00				
collective	0.20	0.03	-0.06	0.32	0.33	0.31	0.45	1.00			
solidarity1	0.26	0.03	0.04	0.22	0.31	0.27	0.49	0.44	1.00		
solidarity2	0.36	0.33	0.30	0.46	0.42	0.14	0.32	0.36	0.49	1.00	
safe	0.15	0.17	0.11	0.27	0.07	-0.07	0.01	0.02	0.08	0.37	1.00

We decide to keep these variables in the RCI 2.0 for two reasons: they are still moderately correlated (since a correlation score of 0.49, 0.49 and 0.32 respectively is not high enough to be eliminated<sup>12</sup>); and their inclusion compensates for the

<sup>12</sup> Correlations are significant at 95% level.

shortfall of variables in the private relations and civic commitment dimension of the RCI<sup>13</sup>.

## 3.2 Functional form

As explained earlier, we construct RCI 2.0 using a geometric mean to introduce an imperfect sustainability between dimensions. Indeed, we defend a holistic approach, which implies that deficiency in one dimension ( $D_k$ ) cannot be equally compensated by a gain in another. As illustrated, every dimension provides rather unique and insightful information.

At the component level ( $a_i$ ), an arithmetic mean is applied:

$$D_k = \frac{1}{n} \sum_{i=1}^n a_i \quad (1)$$

For the RCI 2.0, the geometric mean of the dimensions ( $D_k$ ) is then computed:

$$RCI\ 2.0 = \left( \prod_{k=1}^3 D_k \right)^{\frac{1}{3}} \quad (2)$$

## 3.3 Results - RCI 2.0

The RCI 2.0 scores and their dimensions' country averages can be found in tables 9 to 11, of the appendix of this paper for the 124 countries. Table 5 below provides the descriptive statistics for the RCI 2.0 and dimensions:

Scrutinizing the country ranking, the first result that stands out is that the two prominent North American nations i.e., United States of America and Canada rank in the top two of our RCI 2.0. Then, followed by eight European nations in the top 10 including The Netherlands, Norway, New Zealand, United Kingdom,

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<sup>13</sup> A much stronger argument for the inclusion of all the three variables, provided improved specification, which is made possible by micro data would be to analyze the types of benevolent individual or household: One who volunteers their time alone, one who participates in donating money to a charity alone, one who does both, and finally one who does neither.

Table 5: Descriptive statistics

Variable	Obs	Mean	p50	Std. Dev.	Min	Max
RCI 2.0	124	0.510	0.495	0.083	0.339	0.689
Integration to network (LC)	136	0.713	0.763	0.137	0.277	0.897
Private relations (PR)	129	0.607	0.600	0.084	0.458	0.815
Civic commitment (CV)	130	0.323	0.297	0.096	0.160	0.558

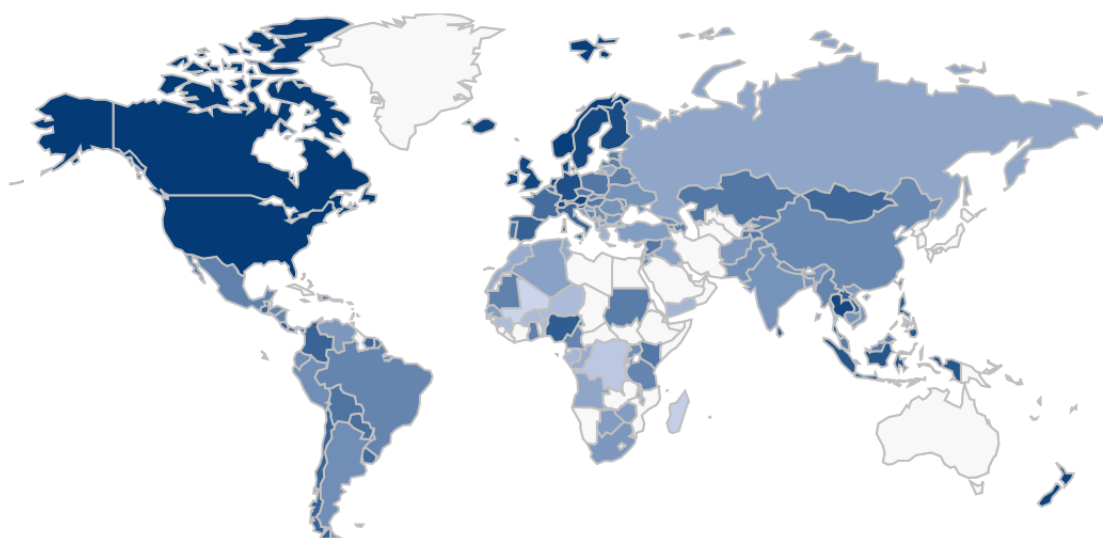
Austria, Iceland, Ireland and Switzerland (in descending order). While the only Asian country, Thailand, almost made the cut in the top 10 (ranked at no. 11).

The bottom 10 nations belong to sub-Saharan Africa with one exception of Yemen (ranked at 115). They include Gabon, Rwanda, Benin, Burkina Faso, Niger, Guinea, Democratic Republic of Congo, Madagascar and Mali (in that order - rank 116 to 124).

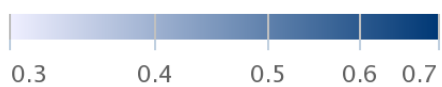
A closer look at the scores and their dimensions/components has several lessons, and are worth analyzing further. Some might consider that USA topping the chart as *eye-popping* due to the well-documented evidence on inequalities based on race, gender and region, and the consequential race based political cleavages or polarization. But, data suggests that USA on average does particularly well in comparison with the other countries in the top - in the Private relations (PR) and Civic commitment (CV) dimensions (especially finance, trust in the community, collective action and the two solidarity variables).

*NB. Due to the non-disclosure agreement with Gallup, we cannot display the raw data that constitutes the indicator at the component level.*

## Relational Capability Index 2.0 – 2012



### Relational Capability Index 2.0



*Note: Heat map produced using highmap Stata plugin. Cf. Roca (2014).  
Browse the results: [http://stats4dev.com/dataviz/RCI\\_map2012.html](http://stats4dev.com/dataviz/RCI_map2012.html)*

Comparing USA vis-a-vis other countries sheds more light. Let us take France (rank 38) for example, which does relatively bad in comparison to other European countries. Among other reasons, in general we could think of the French outlier particularity as demonstrated by Senik (2013) in the subjective well-being, happiness and opinion surveys. A second look informs us that the low scores of two solidarity variables (0.25 and 0.24), trust in the community (0.35), and finance (0.40) points us towards the welfare state replacing (or ‘crowding out’) the existence of the community-based (any denomination) organizations as observed by several others - Hungerman (2005) and Gill and Lundsgaarde (2004). We can say that this result shows how important is the challenge of fostering quality bonds in a society where many social benefits are mediated by the state.

To disentangle the significance of welfare states and social cohesion, we verify the index scores by removing the two solidarity variables from the RCI 2.0. We then have the following result (refer to table 6).

Table 6: RCI 2.0 adjusted - excluding solidarity variables (First 20 and last 20 countries)

Country	Rank	RCI 2.0	LC	PR	CV	Country	Rank	RCI 2.0	LC	PR	CV
Norway	1	0.71	0.84	0.73	0.59	Haiti	105	0.48	0.47	0.71	0.33
Austria	2	0.7	0.81	0.75	0.57	Botswana	106	0.47	0.59	0.68	0.27
Sweden	3	0.7	0.84	0.72	0.57	Congo	107	0.47	0.52	0.58	0.35
Denmark	4	0.7	0.8	0.69	0.61	Russian Fed.	108	0.47	0.82	0.53	0.24
United States	5	0.69	0.81	0.77	0.52	South Africa	109	0.47	0.63	0.67	0.25
Canada	6	0.68	0.81	0.75	0.53	Myanmar	110	0.47	0.39	0.55	0.48
Finland	7	0.68	0.81	0.78	0.51	Pakistan	111	0.47	0.67	0.57	0.27
Iceland	8	0.68	0.9	0.67	0.53	Niger	112	0.46	0.32	0.59	0.51
Netherlands	9	0.68	0.84	0.72	0.52	Rwanda	113	0.45	0.35	0.49	0.55
Switzerland	10	0.68	0.82	0.69	0.55	Angola	114	0.45	0.63	0.55	0.27
Thailand	11	0.67	0.87	0.72	0.47	Benin	115	0.45	0.44	0.48	0.44
Germany	12	0.67	0.82	0.68	0.53	Burkina Faso	116	0.45	0.4	0.56	0.41
Slovenia	13	0.66	0.83	0.65	0.54	Afghanistan	117	0.45	0.58	0.53	0.3
Luxembourg	14	0.66	0.84	0.63	0.54	Gabon	118	0.44	0.39	0.63	0.35
United Kingdom	15	0.65	0.82	0.71	0.49	Iraq	119	0.44	0.73	0.52	0.23
Ireland	16	0.65	0.8	0.72	0.47	Malawi	120	0.43	0.41	0.62	0.31
New Zealand	17	0.64	0.83	0.77	0.41	DR Congo	121	0.41	0.41	0.56	0.31
Philippines	18	0.64	0.68	0.74	0.52	Guinea	122	0.41	0.36	0.56	0.35
Spain	19	0.64	0.76	0.66	0.51	Mali	123	0.41	0.28	0.58	0.42
Hong Kong	20	0.63	0.81	0.63	0.5	Madagascar	124	0.37	0.38	0.52	0.27

We find that the ‘usual suspects’<sup>14</sup> countries, which are also largely welfare states emerge in the top 10, suggesting perhaps that France is an exception even in the relational sense (albeit an improvement of 9 positions). In the bottom 10, some of the sub-Saharan African countries are replaced by Afghanistan, Iraq and Malawi favoring Niger, Rwanda and Yemen.

In South Asia, we see that the RCI 2.0 scores (refer to tables 8 to 10 in appendix) are consistent with the analysis provided in Dreze and Sen’s latest book - Dreze and Sen (2013). Sri Lanka (rank 22) is doing impressively better than India (rank 93) and all its neighbors. Indeed, according to a widely accepted opinion since the era of independence dawned on the Asian subcontinent, the rapid and sustained economic expansion in Sri Lanka (albeit the civil war) has created a shared prosperity. The government has fostered inclusive policies by prioritizing investments in primary health care, public education and infrastructure (electricity, sanitation and transportation). Thus, despite its relatively lower average income per capita PPP (although at least twice higher than other neighboring countries in the region), Sri Lanka gets higher scores in all the three dimensions of the relational capability (0.69, 0.67 and 0.47 respectively): large parts of the population have been better integrated to networks; a stronger sense of unity is reflected in the civic commitment dimension (the causality remains to be tested).

All the countries in the region started with a low base. Bangladesh (rank 92), in addition, has had a late start (independence from Pakistan in 1971) as well. The country has been on a steady democratic development path. The textile industry, agriculture and women-centered micro-finance have created jobs that have had an impact on the country’s development (although the level of wages remains very low and many workers do not enjoy decent working conditions). Some public policies have contributed to counter poverty, improve literacy, educational attainments (especially girls), sanitation and health care. These policies may translate in increased relational opportunities for people, either because they enjoy a better access to employment, communication and information, or because they have increased agency and resources that enable them to take part in civic activities. Bangladesh is ranked (marginally) better than India despite the less than half its income per capita. This reiterates the importance of monitoring RCI as a complementary development indicator.

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<sup>14</sup> Nevertheless, Scheepers, Grotenhuis, and Gelissen (2002) demonstrate that differential social security rates in 13 European countries does not explain the differences in social capital (social contacts).



In India, the stark unequal patterns of development well documented in the authors' comprehensive book, contrasts with the positive picture of the "rising India" as painted by the media. The country fares low across social indicators. As the authors put it aptly, "...the country looks more and more like islands of California in a sea of sub-Saharan Africa". This goes along with a deterioration of the quality of the social bonds.

Few aberrant scores emerge in countries like Russia (rank 107, RCI 2.0 score of 0.42) where the low overall RCI 2.0 score seems to be driven by the civic commitment dimension. These can be alleviated for instance, if we can observe all types of solidarity action taken by citizens and if we can include all forms of collective actions undertaken. Perhaps 'voicing opinion to an official' is not the most common way to express feedback since we have seen large scale demonstrations and protest marches in Russia in the recent years. Hence, any multidimensional indicator, like the RCI 2.0 is constrained by data availability<sup>15</sup>.

Elsewhere in countries like Nigeria (rank 25, RCI 2.0 score of 0.59) and Syria (rank 45, RCI 2.0 score of 0.52), also seem counterintuitive of what RCI ideally likes to capture. One might suspect that in Nigeria where well-documented chieftdom prevalence which hands out fruits of development in a clientelist fashion is reflected in the high RCI 2.0 scores - where private relations (highest score of 0.82 in the entire sample) is crucial in obtaining these benefits. When we look further, this can be explained by the deep divide (10 percentage points) in the relational capabilities between the top 20% income earners and the bottom 20% income earners. This is also cross-verified with a 'high' gini coefficient of 42.95 (year 2010<sup>16</sup>). Whereas in Syria, we can extend a similar argument that when a country experiences war and faced with sever political uncertainty, the best option for citizens is to have a deeper personal ties (personal relations dimension score of 0.67 which is the highest among the countries within a range of +/- 20 RCI 2.0 ranks; and among the highest in the entire sample for 'support', 'finance' and 'friend1' and 'friend2' components) and a robust solidarity (relatively high score of 0.31 in the same subcategory of countries) given that the overall civic commitment dimension score is strongly pulled downwards by the collective action component.

We also explore how the RCI 2.0 interacts (refer to table 7) with the other prominent (multidimensional) development indicators. Overall, RCI 2.0 is strongly correlated<sup>17</sup> with the income levels (GDP per capita), HDI and subjective wellbeing

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<sup>15</sup> Values surveys like World Values Surveys and Barometers surveys have extensive information on civic commitment dimension to facilitate further investigation.

<sup>16</sup> World Bank - World Development Indicators

<sup>17</sup> all the correlations are 95% significant

indicator (life satisfaction). However, we observe that they are not strongly correlated (positive or negative) with the subjective legitimacy or institutional quality variables.

Firstly, higher income levels are not a prerequisite to having a flourishing life in the relational capability sense. There is no denying that income serves (a 0.69 correlation between RCI 2.0 and GDP per capita) as a means of expanding choice sets of individuals, liberties and access to opportunities<sup>18</sup>. However, we observe that Thailand and Philippines are in the top 20 of the chart (rank 11 and 20 respectively) which are emerging upper-middle and lower-middle income countries respectively<sup>19</sup>. Secondly, RCI 2.0 is also strongly correlated with HDI (0.65), and very close from the correlation with GDP per capita (0.69).

All this suggests the interest of monitoring RCI along with HDI and income measures, since they bring different information for development policy decisions.

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<sup>18</sup> We also observe that GDP per capita and HDI are also correlated (0.71) which does not mean that they are substitutes - refer to table 7.

<sup>19</sup> as per the World Bank income classification of countries:  
<http://data.worldbank.org/about/country-and-lending-groups>

Table 7: Pairwise correlation table RCI 2.0, year 2012

Variables	RCI 2.0	HDI	GDPpc	Polity	Unemploy.	Health exp.	Edu.	Corrupt.
HDI	0.6531 (0.0000)							
GDP per capita	0.6850 (0.0000)	0.7107 (0.0000)						
Polity	0.3791 (0.0000)	0.3572 (0.0000)	0.0367 (0.6544)					
Unemploy.	-0.1675 (0.0640)	0.0661 (0.4157)	-0.1604 (0.0390)	0.1448 (0.0713)				
Health exp.	0.6948 (0.0000)	0.7385 (0.0000)	0.7233 (0.0000)	0.3847 (0.0000)	-0.0306 (0.6941)			
Edu.	0.5462 (0.0000)	0.7457 (0.0000)	0.4139 (0.0000)	0.2096 (0.0394)	-0.0207 (0.8328)	0.2965 (0.0016)		
Corrupt.	-0.3793 (0.0000)	-0.4014 (0.0000)	-0.5733 (0.0000)	0.0160 (0.8631)	0.1743 (0.0500)	-0.5041 (0.0000)	-0.1485 (0.1859)	
Subj. Well being	0.7278 (0.0000)	0.7667 (0.0000)	0.6596 (0.0000)	0.3260 (0.0002)	-0.1552 (0.0681)	0.7236 (0.0000)	0.5157 (0.0000)	-0.4062 (0.0000)

*Notes:*

HDI: *Human Development Index - UNDP*

GDPpc: *GDP per capita, PPP (constant 2011 international \$) - WDI*

Polity: *Polity IV, political regime 0: Dictatorship to 10: Democracy*

Unemploy.: *Unemployment, total (% of total labor force, modeled ILO estimate)- ILO*

Health exp.: *Health expenditure per capita, PPP (constant 2005 international \$) - WDI*

Edu.: *Primary education completion rate, total (% of relevant age group) - WDI*

Corrupt: *Corruption in government - Gallup*

Subj. Well being: *Life satisfaction - Gallup*

## 4 RCI 2.0: towards disintegrability

As referenced earlier, the Human Development Index is the most successful attempt in operationalization of Sen's capability framework. Since 1990, HDI's methodology and content have evolved, taking stock of the critics and reflecting the progress of development (thankfully, literacy rate is no longer discriminant in education achievement). Component's cap<sup>20</sup> insofar as functional form, have evolved over time. Nevertheless, its "macro" feature prevent it from zooming into populations, from getting closer to the people. This can be seen as paradoxical for an indicator symbolizing people oriented development. Alongside and based on household surveys, the Multidimensional Poverty Index somehow addresses the "little people centered" limitation of the HDI, however the MPI can hardly be considered as a capability index.

Over the years, HDI has paid heed to the critics of being an average human development evaluation supposed to reflect the entire population of a country. For this reason, the indicator is particularly indifferent to the extent of the inequality in distribution of human development dimensions within a country.

There are several measures of HDI adjusted for (income) inequality, they are readily found in the literature documented in the UNDP Human Development Reports (HDR). Some of them include the Atkinson (1970) inequality measure also dubbed as the 'Atkinson's welfare standard', 20-20 ratios, and the Sen's welfare standard which simply discounts the income inequality using the gini estimates from the HDI country score. In the same light, some other examples include the HDI by socioeconomic factors. Some examples include the HDI by gender (HDR 1991), by race and gender (HDR 1993), by regions (NHDR 2002), by income quintiles (HDR 2006). It's worth mentioning at this juncture that although inequalities in other dimensions of human development are well recognized, its rarely measured and monitored in a systematic manner.

The main asset of our RCI 2.0 lies in its disintegrability. Indeed, the underlying data allows us to disintegrate our index by gender, income level and region. We assume that the RCI 2.0 is sensitive to the inequality in the distribution of relational capabilities within a country and suggest zooming in. We introduce three measures for this purpose:

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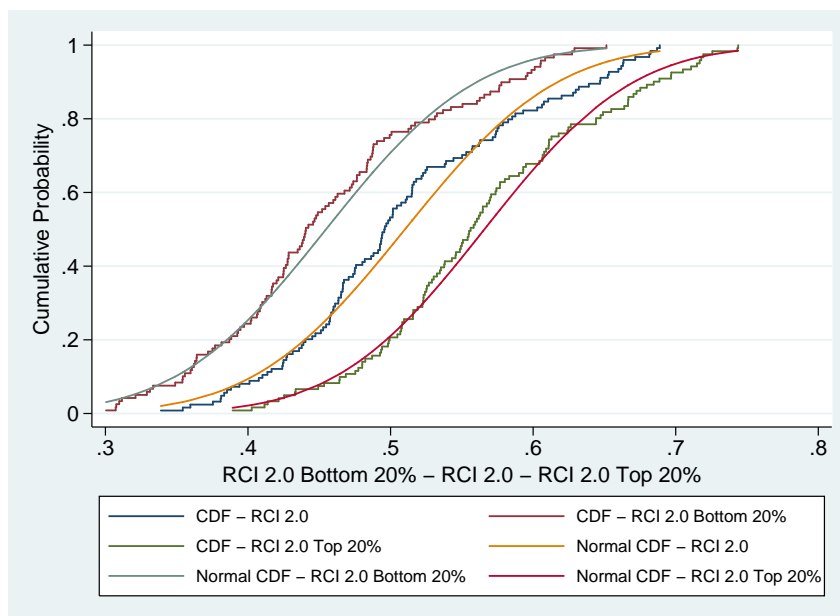
<sup>20</sup> way of normalizing setting an upper limit after which a variable is assigned the maximum value, i.e. 1 in the case of HDI components

- RCI 20-20
- RCI by sex
- RCI by regions

These three disaggregated measures of RCI for analysis above were chosen among other possible measures to be representative of the several aspects that are persistent in the manifestation of inequality. This is also made possible thanks to the Gallup world poll. Their sampling is ensured to be representative for all types of demographics disaggregation like employment, income quintiles, sex, etc.

#### 4.1 RCI by top 20% and bottom 20% income

Figure 1: Cumulative Distribution Function (CDF) of RCI 2.0 (Bottom 20% income earners - Top 20% income earners)



The relationship between income inequalities and relational inequalities is a key issue as several recent works show the increase of wealth and income inequalities within countries and between countries - Piketty (2013). We interestingly observe that relational inequalities tend to be high in industrialized countries where income inequality is high, which is consistent with Wilkinson and Pickett's work -

Table 8: RCI 2.0 by top 20% and bottom 20% income (First 10 and last 10 countries)

Country	Rank	RCI 2.0 <sup>(t)</sup>	RCI 2.0 <sup>(b)</sup>	Distance	Country	Rank	RCI 2.0 <sup>(t)</sup>	RCI 2.0 <sup>(b)</sup>	Distance
Angola	1	0.43	0.44	-0.33	Zimbabwe	117	0.59	0.33	25.97
Uganda	2	0.50	0.50	-0.07	Portugal	116	0.61	0.40	20.92
Ecuador	3	0.51	0.48	2.35	South Africa	115	0.56	0.37	18.86
Thailand	4	0.68	0.65	2.84	Estonia	114	0.61	0.43	18.14
Vietnam	5	0.47	0.44	2.89	Bulgaria	113	0.55	0.38	17.90
Italy	6	0.59	0.56	3.24	Malawi	112	0.53	0.36	17.33
Ghana	7	0.50	0.46	3.95	Myanmar	111	0.57	0.40	17.02
Greece	8	0.42	0.38	4.46	Mauritania	110	0.59	0.42	17.00
Syria	9	0.54	0.49	5.05	Tanzania	109	0.57	0.41	16.74
Mexico	10	0.53	0.47	5.89	Romania	108	0.55	0.39	16.38

*Note 1:* RCI 2.0<sup>(t)</sup> - RCI 2.0 of top 20% income earners

*Note 2:* RCI 2.0<sup>(b)</sup> - RCI 2.0 of bottom 20% income earners

*Note 3:* Distance is the arithmetic difference between the top 20% and bottom 20% income earners within a country, expressed as a percentage.

Wilkinson and Pickett (2010)<sup>21</sup>. The authors show that health and social problems (including trust and community life) are much more acute in more unequal countries. Some of the social problems that the authors analyze are also components of the second and third dimensions of the RCI.

From table 8, we see that the difference of relational capabilities between the top 20% income earners and the bottom 20% income earners within a country can attain up to 26 percentage points (Zimbabwe). For example, in South Africa, which features at the bottom of the list, we may expect that the racial cleavage persists (at least in terms of income inequality) from the Apartheid era. This may contribute to destroy the quality of the social bonds within the population as a whole, which is reflected in the lowest civic commitment dimensional score in the world of 0.21.

With respect to industrialized countries, what we notice is that, except for Portugal (rank 116, second lowest rank with a 21 percentage points relational capabilities difference), Ireland (rank 102, 16 percentage points difference) and Hong Kong (rank 99, 15.7 percentage points difference), none of the industrialized economies is lowly ranked in terms of relational capabilities differences between the top 20% income earners and bottom 20% income earners. This is rather intuitive, since the entire population of these countries has a definitely better access to networks (first dimension of the RCI: employment, transportation, information and telecom-

<sup>21</sup> Earlier references in this literature include - Galbraith and Berner (2001) and Galbraith (2000)

munications) than developing countries. The trend is similar on average for the civic commitment dimension of the RCI in comparison with non-industrialized countries. However, rather surprisingly, these same industrialized countries (NB. including the Scandinavian countries) are not highly ranked either. This suggests that the distribution of relational capabilities between the top and low income earners in these countries fall short in the civic dimension and private relations dimension of the RCI. One explanation is the hypothesis of the state mediated social services goods provision which may have a deleterious effect on civic commitment and private relations dimension of the RCI. This requires further analysis on where these discrepancies arise from.

Lastly, there are two countries, Angola and Uganda namely, where the bottom 20% income earners are better off in terms of relational capabilities versus the top 20% income earners. Angola could be considered as an “outlier”. Angola has a low rank (rank 110) in comparison with other countries). This result seems dubious given the oil exports intensive economy with inherent social inequalities pervasive in the society. This country also has one of the lowest RCI disparities by sex. In this light, a further investigation is required and nothing can be concluded. On the other hand, Uganda (RCI 2.0 rank 76) is the country where the bottom 20% income earners are better off versus the top 20% income earners. This country has made enormous progress to abate poverty in the recent years. Despite these achievements, large parts of the country’s population remain poor, and it is also fraught with the high HIV incidence. The private relations score of 74% in Uganda is the best in the world, perhaps a sign of the improved social climate?

Figure 2: RCI 2.0 Top 20% income earners vs. Bottom 20% earners



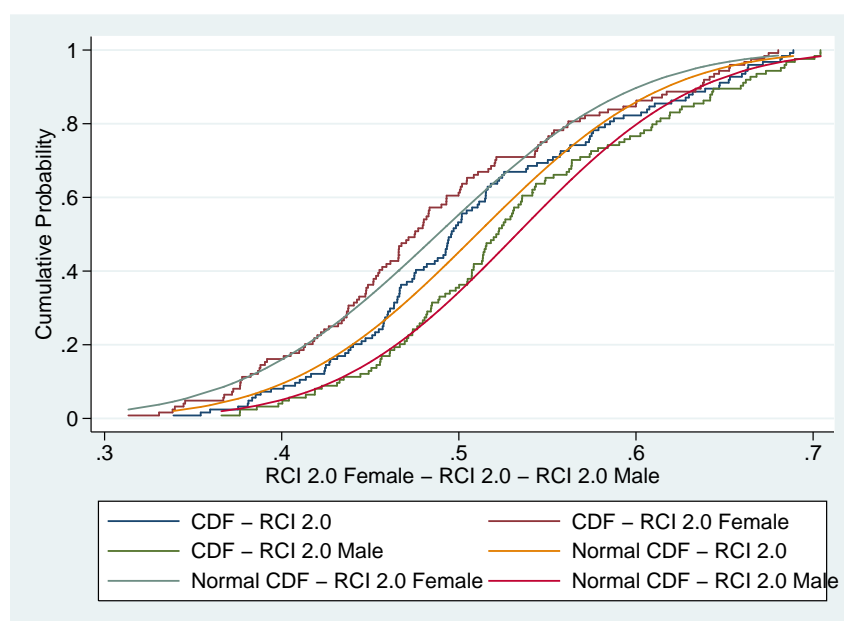


## 4.2 RCI by sex

We disaggregate the relational capabilities (RCI 2.0) of countries by sex in the order of their average relational capabilities (RCI 2.0 country scores) to observe the disparity. Overall, all the countries in the world in 2012 with the only exception being Sweden (with a positive disparity of -.015 favoring women in the relational capability sense), putting women at a disadvantage.

Norway and United Kingdom are the only two countries which feature in the top ten countries of the RCI 2.0 as a country average (0.72 and 0.70 respectively) and are doing well with least disparity between the sexes (0.0014 and 0.0068 respectively). On the other hand, Yemen is the only country that features in the bottom ten countries on the average relational capabilities (0.446) and among the worst countries in absolute disparities (0.09) between the sexes. Although, Afghanistan is the worst country in terms of absolute disparities (0.164), it is still better to be a woman in Afghanistan than in Yemen.

Figure 3: Cumulative Distribution Function (CDF) of RCI 2.0 (Male-Female)



*Note 1:* After a certain (higher) threshold of relational capabilities, the gap between men-women narrows down.

When we look closer into the relational capabilities disparities between men and women (refer to 11), we also observe that disparities in relational capabilities narrow down as the cross-country relational capabilities rise. In other words, disparities by sex are higher in a relationally poor country and vice-versa in a relationally rich country. This might be explained by different scores on the first and third dimensions of RCI, concerning integration to networks (employment, transport, telecommunications and information) and civic commitment. Although there are several forms of gender discrimination in the economically developed nations, we can expect the whole population of these countries to be well connected to transportation, information and communication means, and to be equally able to participate in community activities and public life.

On the other side of the spectrum, there could be cultural reasons why women in the developing world are less integrated to networks or are less involved than men in society. Firstly, there is a clear shortage of infrastructure that prevents people from accessing to labor markets, transportation, telecommunications and information, and that may further reduce opportunities for women. Secondly, some specific cultural factors (like patriarchy) may also contribute to increase the gender divide. For example, the prevalence of female feticide and infanticide in South Asia; female genital mutilation in sub-Saharan Africa; and reduced rights in Middle Eastern countries towards women: these observed worst forms of violence against women translate to persistent discrimination throughout their existence. At this point, one might highlight the disparities between urban men and rural women.

Lastly, we need to mention that, with no missing information in all the countries surveyed, the rankings and the disparities rankings picture could change.

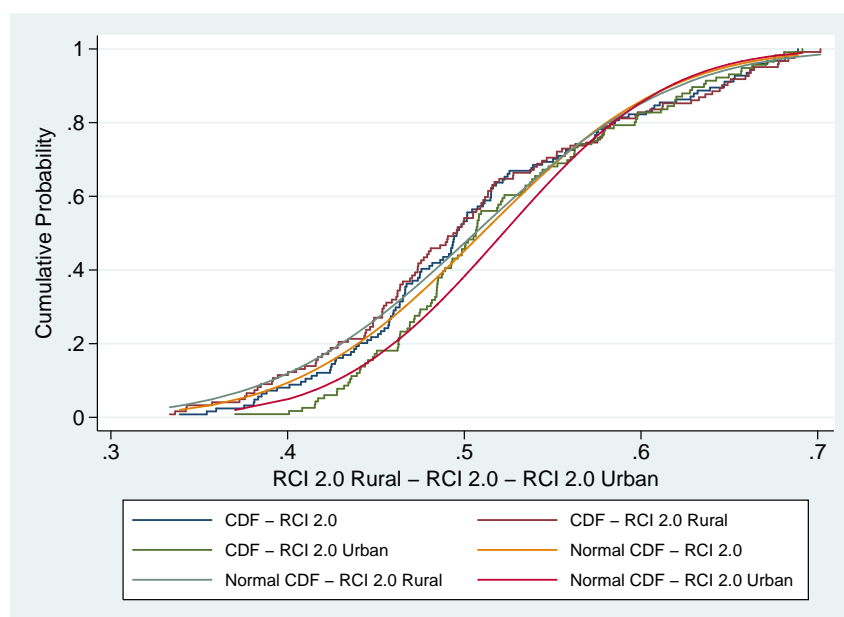
Figure 4: RCI 2.0 Male vs. female



### 4.3 RCI by regions

In a similar exercise as the RCI 2.0 by sex, the urbanization effects are discussed in this section of our RCI 2.0 disaggregated by Urban-Rural areas within a country. Here again, we disaggregate the relational capabilities (RCI 2.0) of countries by urban-rural areas in the order of their average relational capabilities (RCI 2.0 country scores) to observe the disparity.

Figure 5: Cumulative Distribution Function (CDF) of RCI 2.0 (Urban-Rural)



Note: After a certain (higher) threshold of relational capabilities, the ‘urban’ and ‘rural’ lines intersect.

In 46 out of 114 countries, persons on average are relationally better off in rural areas as opposed to urban areas. Argentina heads the chart with a disparity of -0.06 with persons relationally richer in the rural areas. On the other hand, Guinea and Madagascar have a pronounced effect skewed towards the urban areas in the relational capabilities of the individuals (0.14 and 0.13 respectively).

United States is the only country which features in the top ten countries of the RCI 2.0 (0.72), is also doing well with the least urban-rural divide (0.004). On the other hand, Benin, Burkina Faso, Guinea, DR Congo and Madagascar are the countries that feature in the bottom ten countries on the average relational capabilities (0.38, 0.38, 0.37, 0.35 and 0.35 respectively) and among the worst countries in absolute disparities (0.07, 0.08, 0.14, 0.07 and 0.14 respectively) between the regions.

Figure 6: RCI 2.0 Urban vs. rural

Relational Capability Index 2.0 urban/rural – 2012



## 4.4 RCI - stochastic dominance and weighting

Comparison of distributions (for example, of income of different countries, or for a same country in different time periods) include largely in computing inequality measures which ideally satisfies several of the “*inequality axioms*”<sup>22</sup>. Whenever inequality measures satisfy the five axioms, they are part of the general entropy (GE) class of measures. Atkinson measures are part of the GE class of inequality adapted to ordinal data<sup>23</sup>.

The alternative approach to compare distributions destined for social welfare comparisons is derived from the the stochastic dominance theory. When rankings distributions are composite indexes, ordinal or rankings in nature or even, ambiguous rankings, stochastic dominance theory suits well for the comparison of distributions. We check for the first order stochastic dominance (FOSD) and second order stochastic dominance (SOSD) in RCI 2.0 distribution for the disaggregated data. Both these have been well explored in the realm of income and poverty analysis. These arise from the seminal works of authors like Dalton (1920), Pigou (1912), Theil (1979), Atkinson (1970), Cowell (1980), Shorrocks (1983) and Bourguignon (1979) among others<sup>24</sup>. This theory is also extended for analyzing the distribution of growth by Ravallion (called the Growth Incidence curves).

In this paper, the first and second order stochastic dominance over distributions essentially does the following:

- *for* FOSD - cumulative RCI 2.0 scores plotted against cumulative population (for example, CDF<sup>25</sup>).
- *for* SOSD - cumulative RCI 2.0 shares scaled by the mean<sup>26</sup> plotted against the cumulative population (for example, Generalized Lorenz Curves (GLC)).

The value of the Cumulative Distribution Function (CDF)  $[F(y)]^{27}$  at  $(y)$  is the

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<sup>22</sup> Pigou-Dalton transfer principle, income scale independence, population principle, anonymity and decomposability.

<sup>23</sup> refer 200 (2000) for a comprehensive reference on distribution analysis

<sup>24</sup> Contributions roughly in chronological order.

<sup>25</sup> Some authors prefer the *Pen's Parade*, which is simply the inverse of CDF.

<sup>26</sup> We could also use median, but RCI 2.0 mean and median are less than 0.2 times s.d. apart, and the entire RCI 2.0 distribution is within +/- 3 s.d. (that is to say, without any extreme points - which affects the mean of any distribution).

<sup>27</sup> Here, the function F can be read as the geometric mean (to compute RCI 2.0) from the dimension with the arithmetic mean of its respective components.

proportion of countries that have less than RCI 2.0 scores  $y$ . If there is no crossing, distribution of B dominates distribution of A i.e., FOSD, if  $F_A(y) \geq F_B(y), \forall y$ . This means that the proportion of countries disaggregated by distribution A of the RCI 2.0 scores<sup>28</sup> with lower than  $y$  RCI 2.0 scores, is higher than the proportion of such countries disaggregated by the (counterpart) distribution B of the RCI 2.0 scores. Of course, this holds true if the *social welfare function* is equal to the sum of RCI 2.0 scores of countries which is an increasing<sup>29</sup> function of dimensions (and its respective components); and in addition we have to assume there is additive separability of the RCI 2.0 country scores. This results in concluding that the social welfare of distribution B of RCI 2.0 scores is higher than in distribution A of RCI 2.0 scores.

Generalized Lorenz Curves was extended (or “generalized”) from the original Lorenz curves to account for levels of incomes (destined for cross-country comparisons)<sup>30</sup>. In other words, Lorenz is concerned, by construction, with the distribution of the pie. Whereas, the GLC is concerned, by construction, to look at *both* the distribution of the pie *and* the size of the pie.

SOSD can also be checked with the help of the integral of the CDF<sup>31</sup> of distributions  $y_A$  and  $y_B$ . If the integral of the CDF of distribution  $y_A$  lies never above and somewhere below that of distribution  $y_B$ , then distribution  $y_A$  has second order stochastic dominance over distribution  $y_B \forall y$ . GLC is essentially the same as the integral of the CDF<sup>32</sup>. Using the same notations as above, where,  $GLC(g) = \int y^* dF(y)$ ;  $GL_B(g) \geq GL_A(g)$ . Hence, for any social welfare function that is increasing and concave<sup>33</sup>, will have SOSD, and imply higher levels of welfare in B over A.

When we look at the CDF graphs of the RCI 2.0 disaggregated by income earners, sex and regions. We can easily imply that we find FOSD of the distribution of top 20% income earners over the bottom 20% income earners; and of the distribution of male over female. However, this is not the case for the distribution of urban regions over the distribution of rural regions in the world. SOSD at first glance would have the results as the FOSD for all the distributional comparisons in question. This is because, all these distributions are within the 2.5 s.d. of the mean. Additionally, there is no need to worry about kurtosis, since the mean and the median are less

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<sup>28</sup> Income earners, sex or region in this paper.

<sup>29</sup> However not strictly increasing for RCI 2.0 due to the geometric version of aggregation.

<sup>30</sup> refer to Shorrocks (1983)

<sup>31</sup> commonly called the “Quantile function”.

<sup>32</sup> Atkinson and Bourguignon (1990) and Howes (1993) have proved this in their papers.

<sup>33</sup> Of course, additive separability of  $y$ , read RCI 2.0 scores, is an already included assumption.

than 0.2 times the s.d. apart - for all the these disaggregated distributions.

Does this mean that we have a clear (representative, at least) snapshot of the world of the wedging RCI 2.0 inequalities of FOSD (and SOSD) of men over women; and top 20% income earners over bottom 20% income earners? Not quite. This will not take us closer to the true picture of disaggregated relational capabilities' inequalities unless we weight the results with population size. At the same time, our previous result of disaggregation by regions' distributions doesn't reflect FOSD and SOSD. So, weighting the RCI 2.0 scores change our results? In other words, how can we compare the *negative* inequalities that we found in Sweden of women over men to countries like Afghanistan, Pakistan and Malaysia which have three to twenty times Sweden's population? In the same spirit, how can we compare Belize, Iceland and Malta (found in our Gallup data) all of which account for less than 500,000 in total population, with China and India<sup>34</sup>?

When RCI 2.0 scores are weighted by population size of the countries, two interesting results emerge<sup>35</sup>. First, there is FOSD and SOSD across all disaggregated distributions (by income earners, by sex and by regions). More interestingly, the FOSD or the SOSD of distributions by region would not have appeared otherwise. Second, the gaps are more pronounced for all the relationally poor countries. For example, there exists a roughly 10 percentage points relational capabilities gap between men and women for close to 70% of the population of the world. Similarly, since most of the emerging and developing countries are experience urban centric growth phenomenon, where the relational capabilities tend to be higher in contrast with the rural areas, we see a, almost 70% of the population in the world experience deficits of at least four percentage points of relational capabilities favoring urban population over rural population. This is more pronounced for almost 40 percent of the rural population in the world that experience deficits of over 6 percentage points as compared to urban population.

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<sup>34</sup> Of course, weighting will not entirely complete the picture since some countries have adverse sex ratios, or in countries where the proportion of urban and rural populations are not the same etc. A step further would be to account for these proportions too.

<sup>35</sup> All graphs and tables are to be found in the appendix.



## 5 Conclusion

RCI 2.0, an alternative to the RCI (original version), has a twofold advantage as demonstrated in this paper. Firstly, the continuous version eliminates the arbitrariness of the cutoffs that affects a multidimensional development indicator. The aggregation method used here allows for local perfect substitutability along the first diagonal; and the geometric mean which has a varying elasticity of substitution and lower substitutability is applied on the tails, which is justified as a basis for holistic human existence. This version also has a better micro/macro interpretability, coupled with empirical application using the standardized Gallup World Poll dataset.

Secondly, RCI 2.0 allows for a rigorous cross-country comparison. The results (re)confirm the importance of monitoring relational capabilities as a development objective per se. The prime interest lies in its complementarity to other development indicators. The disintegrability is another significant feature; thanks to Gallup World Poll, we study the cross-cutting dividing lines of various forms of inequalities in a society; in particular the relationship between income or gender inequalities and relational capabilities has to be further explored and can lead to interesting public policy recommendations (e.g. reduced income inequalities lead to higher relational capabilities).

Hence, we believe, a composite multidimensional indicator of relational capabilities should be favored in monitoring countries' performance. The Relational Capability Indicator essentially reflects some key outcomes of various pressing development debates in the world (on distribution, growth, social cohesion and capabilities).

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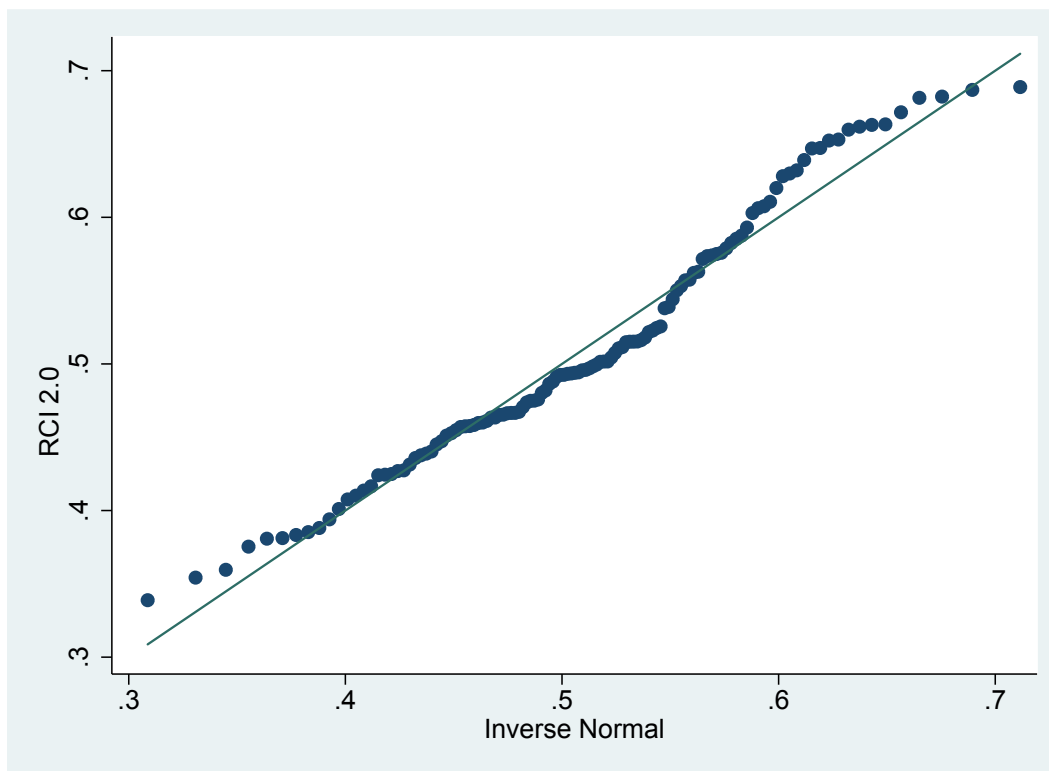
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Figure 7: Quantiles plot of RCI 2.0 against the quantiles plot of the normal distribution



*Descriptive Statistics:* Weighted by population size.

Variable	Obs	Mean	p50	Std. Dev.	Min	Max
RCI 2.0	117	0.504	0.480	0.076	0.339	0.689
Integration to network (LC)	127	0.732	0.750	0.119	0.277	0.897
Private relations (PR)	122	0.575	0.535	0.097	0.458	0.815
Civic commitment CV	123	0.314	0.310	0.092	0.160	0.538

Table 9: RCI 2.0 scores, ranks, dimensions and decomposition (contd.)

Country	Rank	Year	RCI 2.0	LC	PR	CV	Male	Female	Urban	Rural	top20%	bot20%
United States	1	2012	0.69	0.81	0.77	0.53	0.70	0.67	0.69	0.69	0.74	0.61
Canada	2	2012	0.69	0.81	0.75	0.54	0.70	0.67	0.68	0.70	0.73	0.60
Netherlands	3	2012	0.68	0.84	0.72	0.53	0.70	0.66	0.68	0.68	0.72	0.63
Norway	4	2012	0.68	0.84	0.73	0.52	0.68	0.68	0.66	0.69	0.70	0.63
New Zealand	5	2012	0.67	0.83	0.77	0.47	0.68	0.65	0.66	0.68	0.72	0.61
United Kingdom	6	2012	0.66	0.82	0.71	0.51	0.67	0.66	0.67	0.66	0.71	0.56
Austria	7	2012	0.66	0.81	0.75	0.49	0.69	0.64	0.66	0.66	0.72	0.61
Iceland	8	2012	0.66	0.90	0.67	0.48	0.68	0.64	0.64	0.68	0.68	0.59
Ireland	9	2012	0.66	0.80	0.72	0.50	0.67	0.64	0.68	0.65	0.74	0.58
Switzerland	10	2012	0.65	0.82	0.69	0.49	0.66	0.65	0.64	0.66	0.71	0.61
Thailand	11	2012	0.65	0.87	0.72	0.44	0.66	0.64	0.62	0.66	0.68	0.65
Denmark	12	2012	0.65	0.80	0.69	0.49	0.66	0.64	0.65	0.65	0.67	0.58
Sweden	13	2012	0.65	0.84	0.72	0.45	0.64	0.65	0.64	0.65	0.71	0.57
Finland	14	2012	0.64	0.81	0.78	0.42	0.64	0.63	0.63	0.64	0.70	0.57
Malta	15	2012	0.63	0.80	0.66	0.48	0.66	0.60	0.62	0.64	0.67	0.60
Germany	16	2012	0.63	0.82	0.68	0.45	0.64	0.62	0.61	0.64	0.64	0.58
Luxembourg	17	2012	0.63	0.84	0.63	0.47	0.64	0.61	0.62	0.63	0.68	0.60
Slovenia	18	2012	0.62	0.83	0.65	0.44	0.64	0.60	0.60	0.63	0.67	0.53
Hong Kong	19	2012	0.61	0.81	0.63	0.44	0.61	0.61	0.62	.	0.69	0.53
Philippines	20	2012	0.61	0.68	0.74	0.45	0.62	0.59	0.62	0.60	0.66	0.54
Indonesia	21	2012	0.61	0.75	0.61	0.49	0.63	0.58	0.63	0.60	0.67	0.55
Sri Lanka	22	2012	0.60	0.69	0.67	0.47	0.63	0.58	0.58	0.61	0.65	0.58
Costa Rica	23	2012	0.59	0.78	0.69	0.39	0.61	0.57	0.55	0.61	.	0.53
Cyprus	24	2012	0.59	0.79	0.62	0.42	0.62	0.55	0.60	0.58	0.67	.
Nigeria	25	2012	0.59	0.64	0.82	0.38	0.62	0.55	0.60	0.58	0.64	0.54
Lao PDR	26	2012	0.58	0.74	0.64	0.42	0.60	0.56	0.60	0.58	0.62	0.49
Panama	27	2012	0.58	0.79	0.68	0.36	0.60	0.56	0.58	0.58	0.65	0.49
Spain	28	2012	0.58	0.76	0.66	0.38	0.59	0.55	0.58	0.57	0.65	0.50
Italy	29	2012	0.57	0.74	0.63	0.41	0.61	0.54	0.56	0.58	0.59	0.56
Colombia	30	2012	0.57	0.80	0.70	0.34	0.61	0.54	0.56	0.61	0.61	0.51
Israel	31	2012	0.57	0.82	0.59	0.39	0.59	0.56	.	.	0.61	0.52
Chile	32	2012	0.57	0.80	0.60	0.39	0.57	0.57	0.56	0.59	0.61	0.51
Mongolia	33	2012	0.56	0.82	0.64	0.34	0.58	0.54	0.54	0.58	0.63	0.48
Guatemala	34	2012	0.56	0.75	0.63	0.38	0.60	0.52	0.57	0.56	0.61	0.49
Taiwan	35	2012	0.56	0.81	0.62	0.35	0.57	0.55	0.56	0.55	0.60	0.48
Suriname	36	2012	0.56	0.80	0.68	0.32	0.56	0.55	0.56	0.54	.	.
Uruguay	37	2012	0.55	0.80	0.62	0.34	0.56	0.54	0.54	0.58	0.62	0.50
France	38	2012	0.55	0.77	0.60	0.36	0.58	0.52	0.54	0.56	0.58	0.49
Paraguay	39	2012	0.54	0.76	0.61	0.35	0.56	0.52	0.56	0.53	0.61	0.47
Belgium	40	2012	0.54	0.74	0.60	0.35	0.56	0.52	0.52	0.55	0.61	0.47
Portugal	41	2012	0.54	0.77	0.62	0.33	0.57	0.50	0.53	0.54	0.61	0.40
Bolivia	42	2012	0.53	0.80	0.60	0.31	0.54	0.50	0.50	0.55	0.56	0.48
Czech Republic	43	2012	0.52	0.84	0.59	0.29	0.54	0.50	0.49	0.54	0.56	0.47
Poland	44	2012	0.52	0.78	0.57	0.32	0.53	0.51	0.51	0.53	0.58	0.48
Syria	45	2012	0.52	0.68	0.67	0.31	0.52	0.52	0.52	0.52	0.54	0.49

Table 10: RCI 2.0 scores, ranks, dimensions and decomposition (contd.)

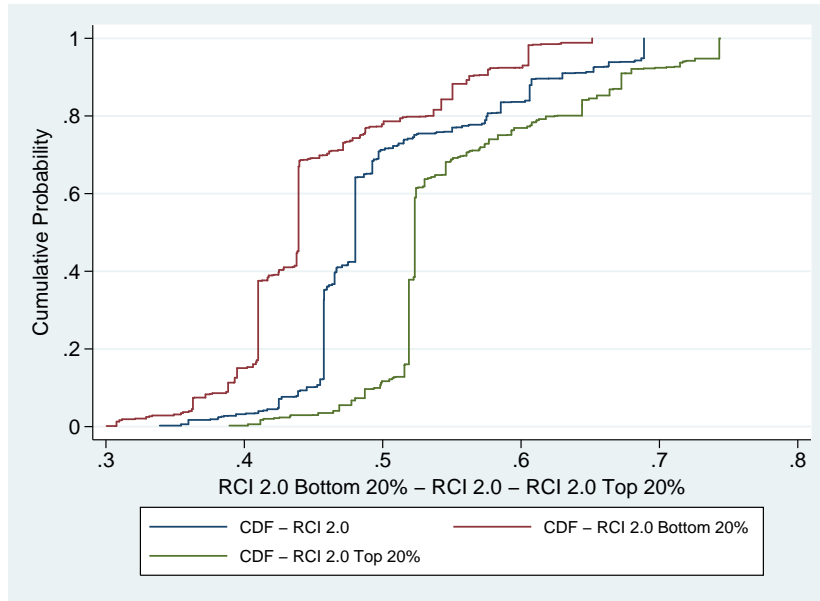
Country	Rank	Year	RCI 2.0	LC	PR	CV	Male	Female	Urban	Rural	top20%	bot20%
Kazakhstan	46	2012	0.52	0.80	0.61	0.28	0.53	0.51	0.54	0.50	0.56	0.49
Kosovo	47	2012	0.52	0.74	0.60	0.31	0.54	0.49	0.52	0.51	0.58	0.43
Tajikistan	48	2012	0.52	0.72	0.50	0.38	0.54	0.49	0.52	0.52	0.56	0.48
Hungary	49	2012	0.52	0.76	0.61	0.29	0.55	0.48	0.51	0.52	0.57	0.48
Kenya	50	2012	0.52	0.57	0.77	0.31	0.53	0.50	.	0.51	0.62	0.45
Estonia	51	2012	0.51	0.81	0.61	0.28	0.53	0.50	0.48	0.54	0.61	0.43
Malaysia	52	2012	0.51	0.81	0.59	0.28	0.56	0.46	0.52	0.50	0.57	0.44
Dominican Rep.	53	2012	0.51	0.71	0.67	0.28	0.55	0.48	0.51	0.52	0.53	0.45
Sudan	54	2012	0.51	0.65	0.67	0.30	0.55	0.47	0.51	0.51	0.59	0.46
Mauritania	55	2012	0.50	0.60	0.72	0.30	0.52	0.49	0.54	0.49	0.59	0.42
Latvia	56	2012	0.50	0.79	0.60	0.27	0.50	0.50	0.49	0.51	0.57	0.44
Azerbaijan	57	2012	0.50	0.79	0.47	0.34	0.53	0.48	0.48	0.51	0.54	0.46
Belarus	58	2012	0.50	0.85	0.52	0.29	0.52	0.49	0.51	0.50	0.54	0.44
Comoros	59	2012	0.50	0.61	0.70	0.29	0.54	0.47	0.53	0.49	0.56	0.42
Ghana	60	2012	0.50	0.58	0.62	0.35	0.52	0.48	0.58	0.48	0.50	0.46
Mexico	61	2012	0.50	0.68	0.58	0.31	0.51	0.48	0.49	0.51	0.53	0.47
Kyrgyzstan	62	2012	0.50	0.80	0.57	0.27	0.52	0.47	0.48	0.50	0.56	0.45
Slovakia	63	2012	0.50	0.78	0.56	0.28	0.51	0.48	0.46	0.51	0.55	.
Nicaragua	64	2012	0.49	0.70	0.59	0.29	0.53	0.47	0.51	0.48	0.56	0.45
Haiti	65	2012	0.49	0.47	0.71	0.37	0.51	0.48	0.55	0.48	.	.
Cameroon	66	2012	0.49	0.62	0.71	0.28	0.53	0.46	0.50	0.49	0.57	0.42
Moldova	67	2012	0.49	0.80	0.59	0.26	0.52	0.48	0.51	0.49	0.54	0.46
Myanmar	68	2012	0.49	0.39	0.55	0.56	0.52	0.47	0.58	0.45	0.57	0.40
Brazil	69	2012	0.49	0.81	0.63	0.24	0.51	0.48	0.48	0.50	0.55	0.44
Bosnia & Herzg	70	2012	0.49	0.74	0.58	0.28	0.51	0.48	0.47	0.50	0.56	0.45
Honduras	71	2012	0.49	0.66	0.58	0.31	0.51	0.47	0.49	0.48	0.55	0.45
Tanzania	72	2012	0.49	0.45	0.71	0.36	0.51	0.47	.	0.47	0.57	0.41
Lebanon	73	2012	0.48	0.79	0.52	0.27	0.51	0.45	0.48	0.47	0.55	0.41
China	74	2012	0.48	0.86	0.51	0.25	0.50	0.46	0.50	0.47	0.52	0.44
Georgia	75	2012	0.48	0.68	0.51	0.31	0.50	0.45	0.49	0.46	0.55	0.43
Uganda	76	2012	0.47	0.49	0.74	0.30	0.52	0.42	.	0.47	0.50	0.50
Ecuador	77	2012	0.47	0.76	0.55	0.26	0.49	0.45	0.46	0.49	0.51	0.48
Montenegro	78	2012	0.47	0.83	0.47	0.27	0.48	0.47	0.49	0.46	0.53	0.42
Nepal	79	2012	0.47	0.59	0.54	0.33	0.51	0.43	.	0.46	0.58	0.42
Jordan	80	2012	0.47	0.77	0.51	0.26	0.50	0.43	0.47	0.47	0.51	0.43
Argentina	81	2012	0.47	0.77	0.58	0.23	0.48	0.45	0.44	0.51	0.52	0.42
Peru	82	2012	0.47	0.70	0.55	0.27	0.51	0.42	0.47	0.45	0.55	0.41
Armenia	83	2012	0.47	0.74	0.51	0.27	0.47	0.46	0.45	0.48	0.51	0.44
Serbia	84	2012	0.47	0.76	0.52	0.26	0.49	0.44	0.49	0.45	0.53	0.42
Pakistan	85	2012	0.47	0.67	0.57	0.27	0.54	0.39	0.50	0.44	0.52	0.36
Cambodia	86	2012	0.46	0.66	0.48	0.32	0.48	0.45	0.51	0.46	0.53	0.43
Macedonia	87	2012	0.46	0.73	0.50	0.27	0.48	0.45	0.46	0.47	0.52	0.41
Romania	88	2012	0.46	0.74	0.53	0.25	0.49	0.44	0.45	0.46	0.55	0.39
Albania	89	2012	0.46	0.79	0.50	0.25	0.47	0.44	0.44	0.47	0.48	0.39
Ukraine	90	2012	0.46	0.82	0.51	0.23	0.48	0.44	0.47	0.45	0.50	0.42
El Salvador	91	2012	0.46	0.72	0.56	0.24	0.48	0.44	0.47	0.45	0.52	0.43



Table 11: RCI 2.0 scores, ranks, dimensions and decomposition (contd.)

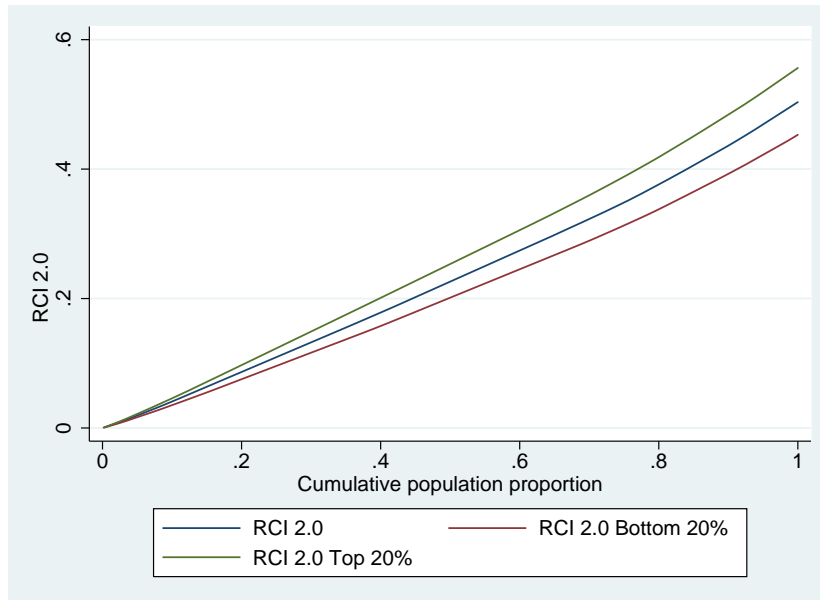
Country	Rank	Year	RCI 2.0	LC	PR	CV	Male	Female	Urban	Rural	top20%	bot20%
Bangladesh	92	2012	0.46	0.57	0.57	0.30	0.49	0.42	0.51	0.45	0.52	0.39
India	93	2012	0.46	0.64	0.48	0.31	0.48	0.43	0.50	0.45	0.52	0.41
Bulgaria	94	2012	0.46	0.76	0.54	0.23	0.48	0.44	0.48	0.44	0.55	0.38
Viet Nam	95	2012	0.45	0.82	0.48	0.24	0.46	0.45	0.46	0.45	0.47	0.44
Venezuela	96	2012	0.45	0.78	0.59	0.20	0.47	0.44	0.44	0.46	0.50	0.43
Croatia	97	2012	0.45	0.81	0.49	0.23	0.46	0.45	0.43	0.46	0.49	0.40
Afghanistan	98	2012	0.45	0.58	0.53	0.29	0.53	0.37	0.53	0.43	0.53	0.36
South Africa	99	2012	0.45	0.63	0.67	0.21	0.45	0.44	0.50	0.42	0.56	0.37
Senegal	100	2012	0.44	0.48	0.68	0.26	0.48	0.40	0.48	0.42	0.52	0.36
Turkey	101	2012	0.44	0.74	0.54	0.21	0.46	0.41	0.44	0.44	0.48	0.39
Zimbabwe	102	2012	0.44	0.50	0.68	0.25	0.47	0.41	0.48	0.42	0.59	0.33
Botswana	103	2012	0.44	0.59	0.68	0.21	0.46	0.42	0.46	0.43	0.52	0.36
Algeria	104	2012	0.43	0.75	0.54	0.20	0.47	0.39	0.44	0.39	0.48	0.41
Palestine	105	2012	0.43	0.70	0.52	0.21	0.47	0.39	0.43	0.42	0.48	0.38
Iraq	106	2012	0.43	0.73	0.52	0.21	0.46	0.39	0.44	0.40	0.48	0.41
Russian Fed.	107	2012	0.42	0.82	0.53	0.18	0.45	0.41	0.43	0.42	0.49	0.39
Lithuania	108	2012	0.42	0.83	0.50	0.19	0.43	0.42	0.41	0.43	0.49	0.36
Malawi	109	2012	0.42	0.41	0.62	0.30	0.46	0.39	0.48	0.42	0.53	0.36
Angola	110	2012	0.42	0.63	0.55	0.21	0.42	0.41	0.46	0.40	0.43	0.44
Tunisia	111	2012	0.41	0.77	0.46	0.20	0.45	0.38	0.43	0.38	0.49	0.33
Morocco	112	2012	0.41	0.74	0.47	0.20	0.44	0.38	0.42	0.41	0.45	0.36
Congo	113	2012	0.41	0.52	0.58	0.23	0.43	0.38	0.42	0.39	0.51	0.35
Greece	114	2012	0.40	0.75	0.54	0.16	0.42	0.38	0.40	0.39	0.42	0.38
Yemen	115	2012	0.39	0.56	0.51	0.22	0.43	0.35	.	0.38	0.46	0.33
Gabon	116	2012	0.39	0.39	0.63	0.24	0.40	0.37	0.42	0.36	0.45	0.31
Rwanda	117	2012	0.39	0.35	0.49	0.34	0.40	0.37	.	0.38	0.51	.
Benin	118	2012	0.38	0.44	0.48	0.27	0.40	0.37	0.45	0.38	0.46	0.30
Burkina Faso	119	2012	0.38	0.40	0.56	0.25	0.39	0.38	0.45	0.37	0.41	0.35
Niger	120	2012	0.38	0.32	0.59	0.30	0.42	0.34	.	0.38	0.43	0.35
Guinea	121	2012	0.38	0.36	0.56	0.26	0.41	0.34	0.48	0.34	0.43	0.32
DR Congo	122	2012	0.36	0.41	0.56	0.20	0.38	0.34	0.42	0.34	0.41	0.31
Madagascar	123	2012	0.35	0.38	0.52	0.23	0.38	0.33	0.47	0.33	0.40	0.31
Mali	124	2012	0.34	0.28	0.58	0.24	0.37	0.31	0.37	0.34	0.39	0.31

Figure 8: Cumulative Distribution Function (CDF) of RCI 2.0 (Bottom 20% income earners - Top 20% income earners)



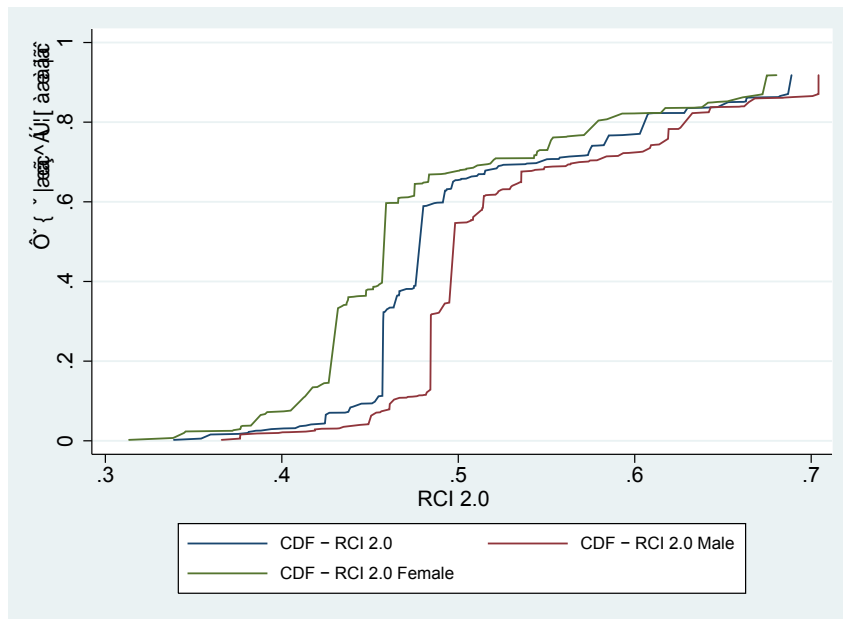
*Note:* Weighted by population size.

Figure 9: Generalized Lorenz Curves of RCI 2.0 (Bottom 20% income earners - Top 20% income earners)



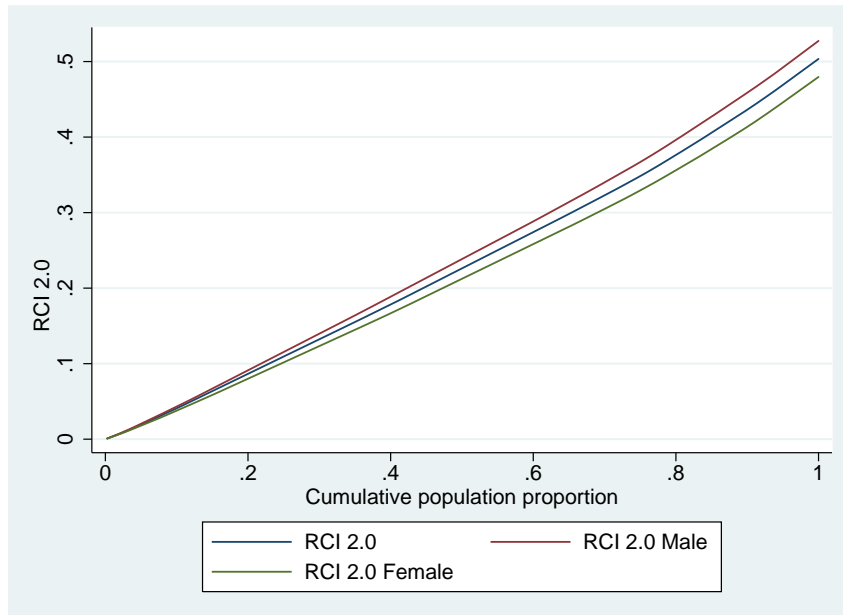
*Note:* Weighted by population size.

Figure 10: Cumulative Distribution Function (CDF) of RCI 2.0 (Male-Female)



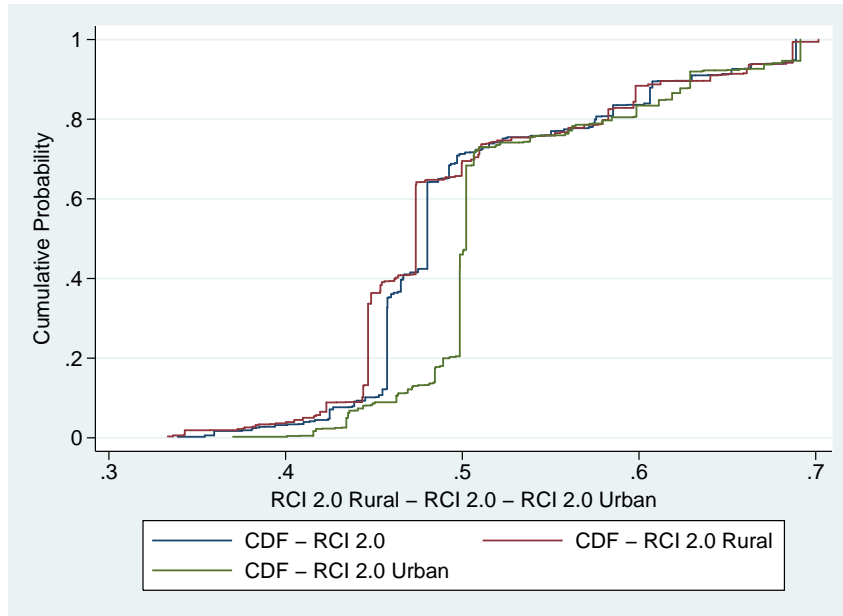
*Note:* Weighted by population size.

Figure 11: Generalized Lorenz Curves of RCI 2.0 (Male-Female)



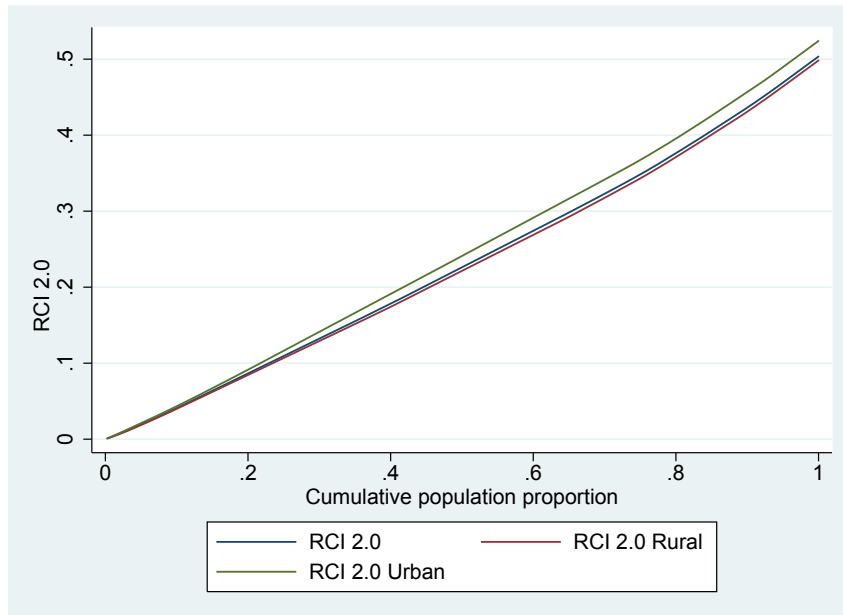
*Note:* Weighted by population size.

Figure 12: Cumulative Distribution Function (CDF) of RCI 2.0 (Urban-Rural)



*Note:* Weighted by population size.

Figure 13: Generalized Lorenz Curves of RCI 2.0 (Urban-Rural)



*Note:* Weighted by population size.

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