

Academic Year 2018-2019

Università Cattaneo - LIUC
ITALY

Sustainable Economic Policy and Management

28.03.2019 - How to measure Sustainability

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Economic system survey

Outlines:

- Basic concepts
- Main measurements in use (global and local level)
- Some experiences around the World
- Conclusions

Focal points to survey a system

- **Habitat** (factors, conditions)
- **Business** (activities and actors)
- ***Comunitas*** (demographic trends, society, institutions)
- ***Ethos*** (culture, aspirations, values)

Basic concepts

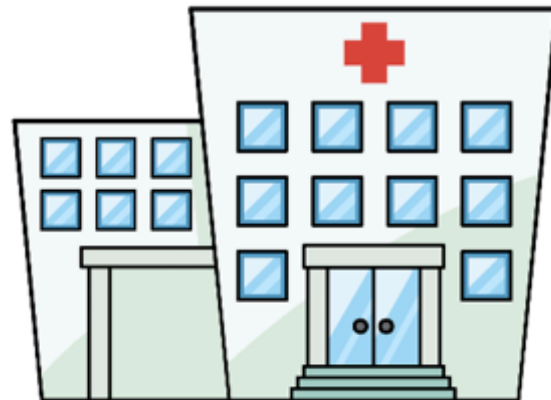
GDP - 1937

Simon Kuznets, an economist at the National Bureau of Economic Research, presents the original formulation of gross domestic product in his report to the U.S. Congress, “National Income, 1929-35.” His idea is to capture all economic production by individuals, companies, and the government in a single measure, which should rise in good times and fall in bad. GDP is born.



Basic concepts

GDP is not adequate?



Basic concepts

From GDP to:

GDP at Purchasing Power Parity - PPP

Adjustment of GDP with local currency prices and cost of local services

Physical Quality of Life Index – PQLI (M.D. Morris, '70s)

GDP + life expectancy + literacy + infant mortality

Measure of Economic Welfare – MEW (W. D. Nordhaus & J. Tobin, 1972)

GDP with non market economy (entertainments, family services...)

Genuine Progress Indicator – GPI

Human Development Index – HDI (UN, from '90s)

Composite indicator

Commission on the Measurement of Economic Performance and Social Progress – CMEPSP

....

Basic concepts



Welfare economics:

Branch of economic studies to evaluate wellbeing at an aggregate level.

Amartya Sen and the **capabilities approach**:

- 1.The importance of real freedoms in the assessment of a person's advantage
- 2.Individual differences in the ability to transform resources into valuable activities
- 3.The multi-variate nature of activities giving rise to happiness
- 4.A balance of materialistic and nonmaterialistic factors in evaluating human welfare
- 5.Concern for the distribution of opportunities within society.

Definition of wellbeing

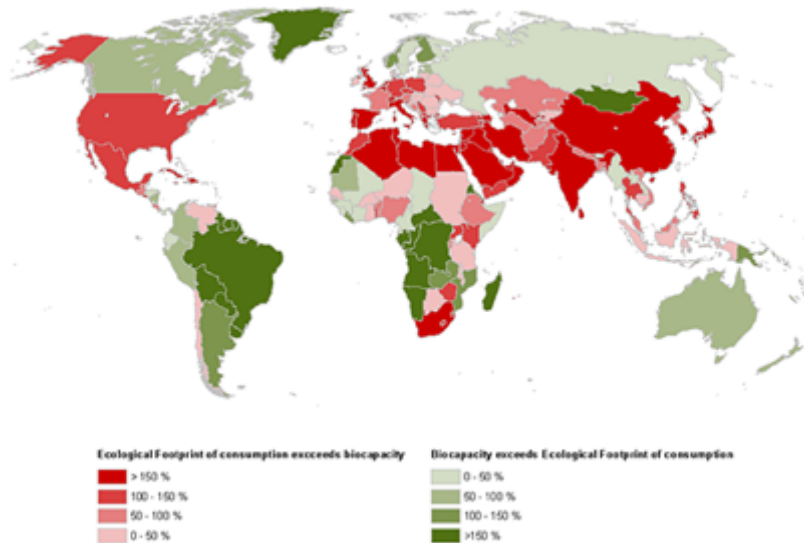
Definition of appropriate measurements

Types of measurements: subjective and objective

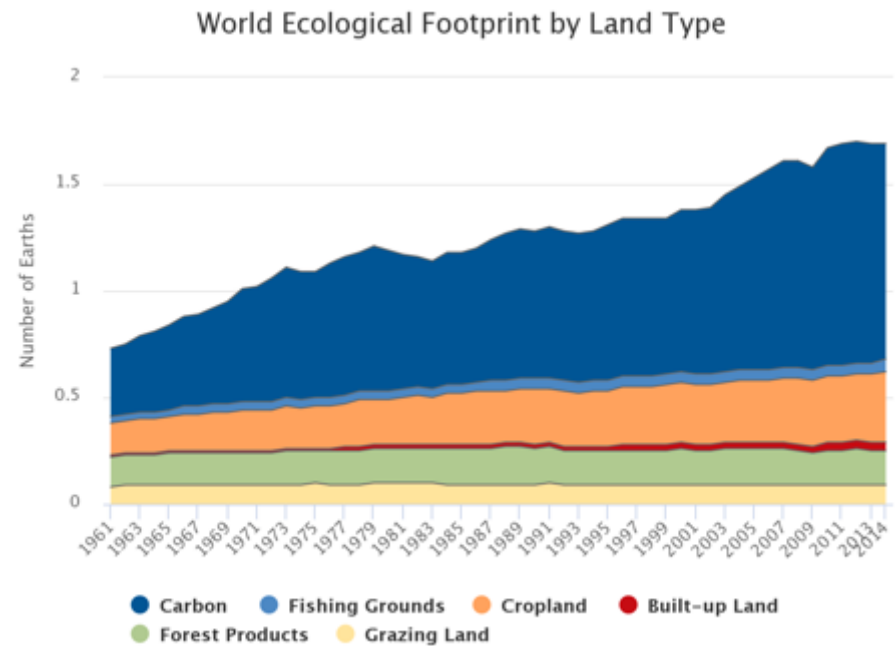
Economic system measurements (habitat)

Landscape and natural resources

Ecological footprint: is derived by tracking how much biologically productive area it takes to provide for all the competing demands of people. They include space for food growing, fiber production, timber regeneration, absorption of carbon dioxide emissions from fossil fuel burning, and accommodating built infrastructure.

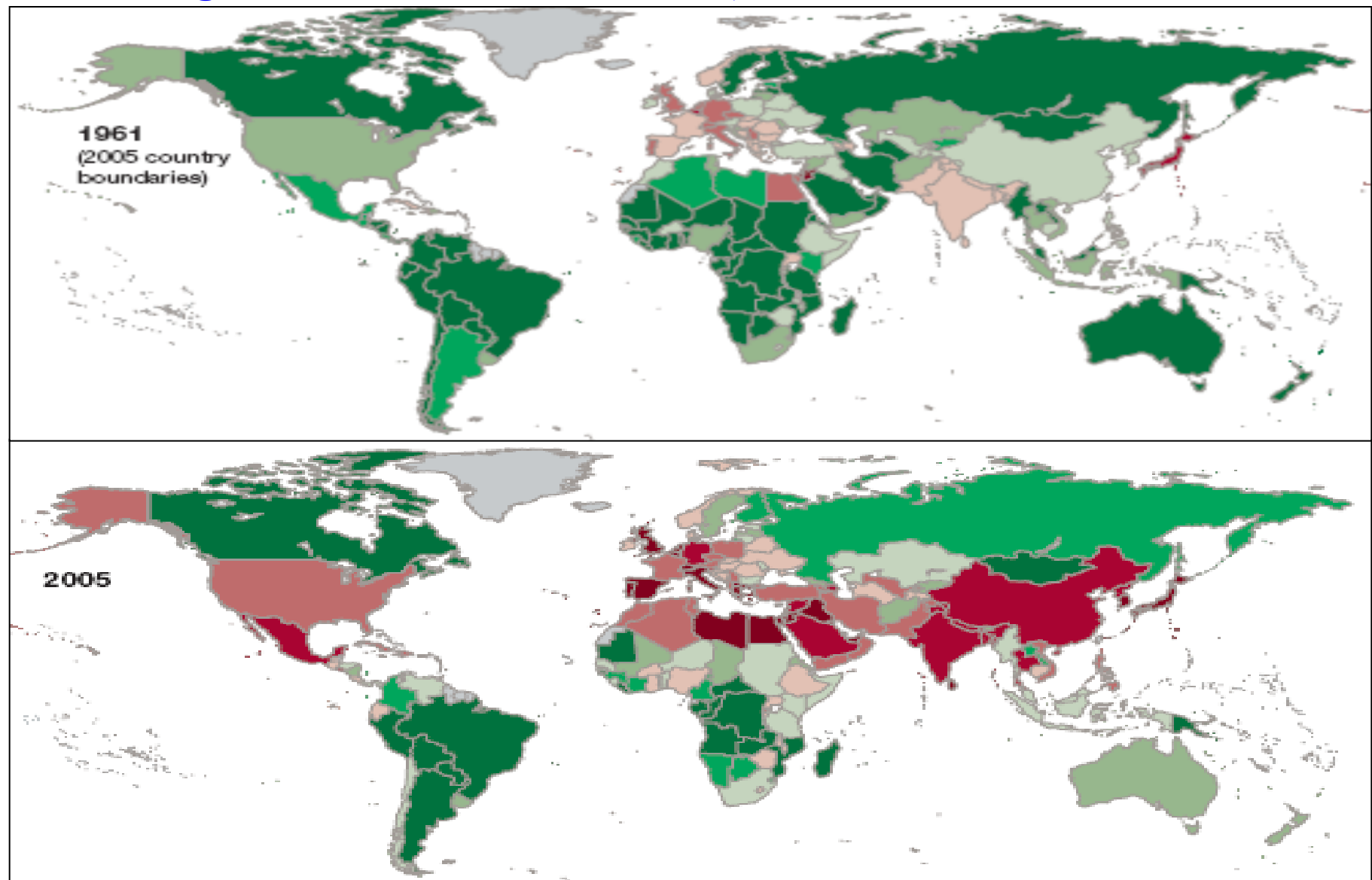


Data from the National Footprint Accounts 2016 Edition. www.footprintnetwork.org



Global Footprint Network, 2018 National Footprint Accounts

Ecological creditors and debtors, 1961 - 2005



Eco-debt: Footprint relative to biocapacity ■ more than 150% greater ■ 100-150% greater ■ 50-100% greater ■ 0-50% greater ■ Insufficient data

Eco-credit: Biocapacity relative to footprint ■ 0-50% greater ■ 50-100% greater ■ 100-150% greater ■ more than 150% greater

Source: Global Footprint Network, 2009

Economic system measurements (habitat)

EPI 2018: first 20

Environmental Performance Index

The Environmental Performance Index (EPI) ranks 180 countries on 24 performance indicators across ten issue categories covering environmental health and ecosystem vitality. These metrics provide a gauge at a national scale of how close countries are to established environmental policy goals.

RANK	COUNTRY	SCORE
1	Switzerland	87.42
2	France	83.95
3	Denmark	81.60
4	Malta	80.90
5	Sweden	80.51
6	United Kingdom	79.89
7	Luxembourg	79.12
8	Austria	78.97
9	Ireland	78.77
10	Finland	78.64
11	Iceland	78.57
12	Spain	78.39
13	Germany	78.37
14	Norway	77.49
15	Belgium	77.38
16	Italy	76.96
17	New Zealand	75.96
18	Netherlands	75.46
19	Israel	75.01
20	Japan	74.69

EPI 2018: last 20

161	Cameroon	40.81
162	Swaziland	40.32
163	Djibouti	40.04
164	Papua New Guinea	39.35
165	Eritrea	39.34
166	Mauritania	39.24
167	Benin	38.17
168	Afghanistan	37.74
169	Pakistan	37.50
170	Angola	37.44
171	Central African Republic	36.42
172	Niger	35.74
173	Lesotho	33.78
174	Haiti	33.74
175	Madagascar	33.73
176	Nepal	31.44
177	India	30.57
178	Dem. Rep. Congo	30.41
179	Bangladesh	29.56
180	Burundi	27.43

Economic system measurements (habitat)

Competitiveness and eco-innovation

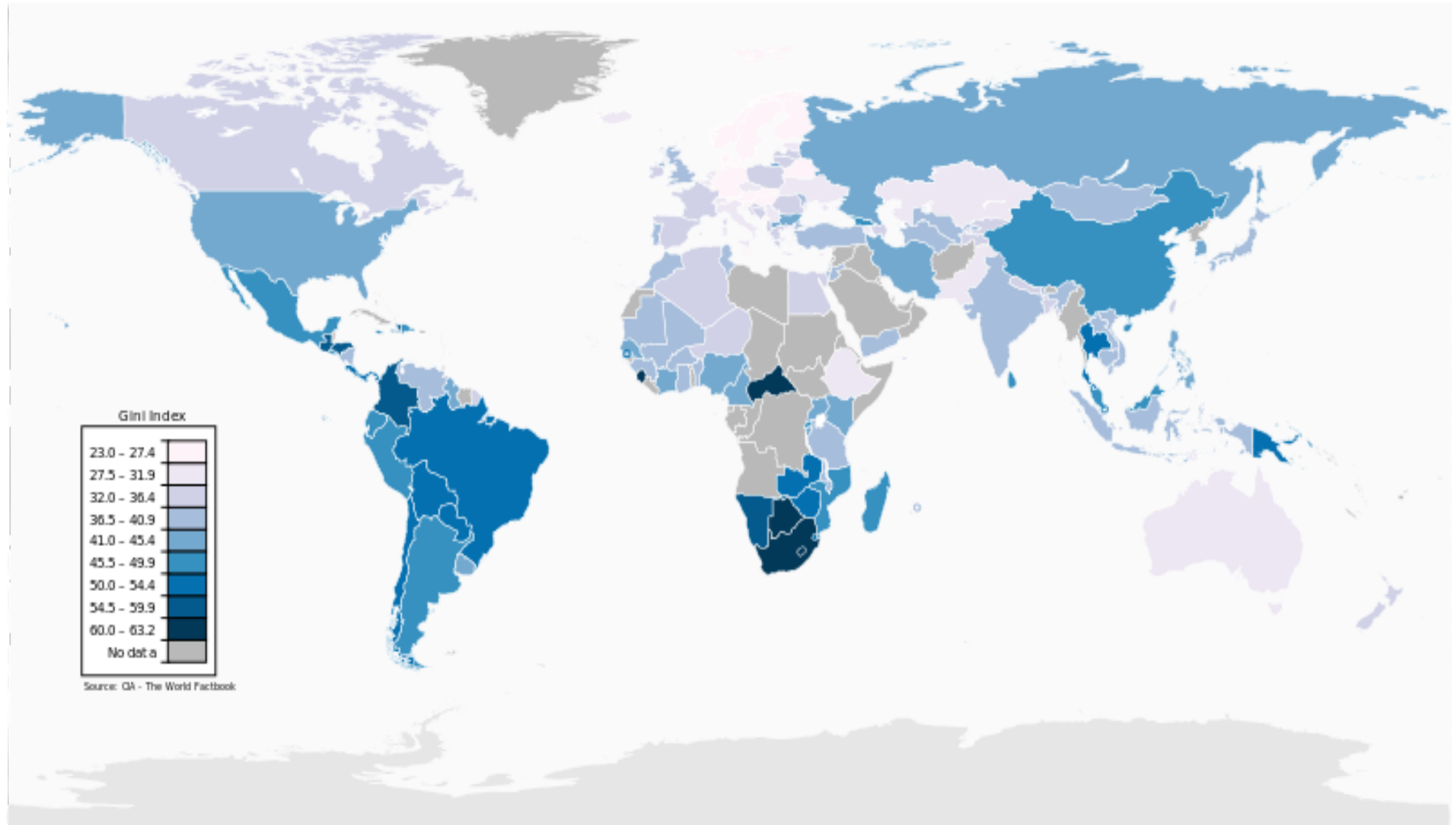
Table 4.2 Competitiveness and stringency of environmental policies and eco-innovation, by country

Country	Global Competitiveness Index (2015/2016) (*)	Stringency of environmental policies (2012) (%)	Eco-Innovation scoreboard (2013) — EU-wide ranking
Switzerland	1	5	N.A.
Germany	4	10	3
Netherlands	5	2	13
Finland	8	3	1
Sweden	9	9	1
United Kingdom	10	4	5
Norway	11	6	N.A.
Denmark	12	1	4
Belgium	19	20	10
Luxembourg	20	N.A.	7
France	22	7	8
Austria	23	13	9
Ireland	24	26	11
Estonia	30	N.A.	16
Czech Republic	31	21	17
Spain	33	23	6
Lithuania	36	N.A.	20
Portugal	38	25	14
Poland	41	11	27
Italy	43	15	11
Latvia	44	N.A.	24
Malta	48	N.A.	18
Turkey	51	27	N.A.
Romania	53	N.A.	21
Bulgaria	54	N.A.	28
Slovenia	59	22	15
Hungary	63	18	22
Cyprus	65	N.A.	26
Slovakia	67	12	25
Croatia	77	N.A.	23
Greece	81	24	19

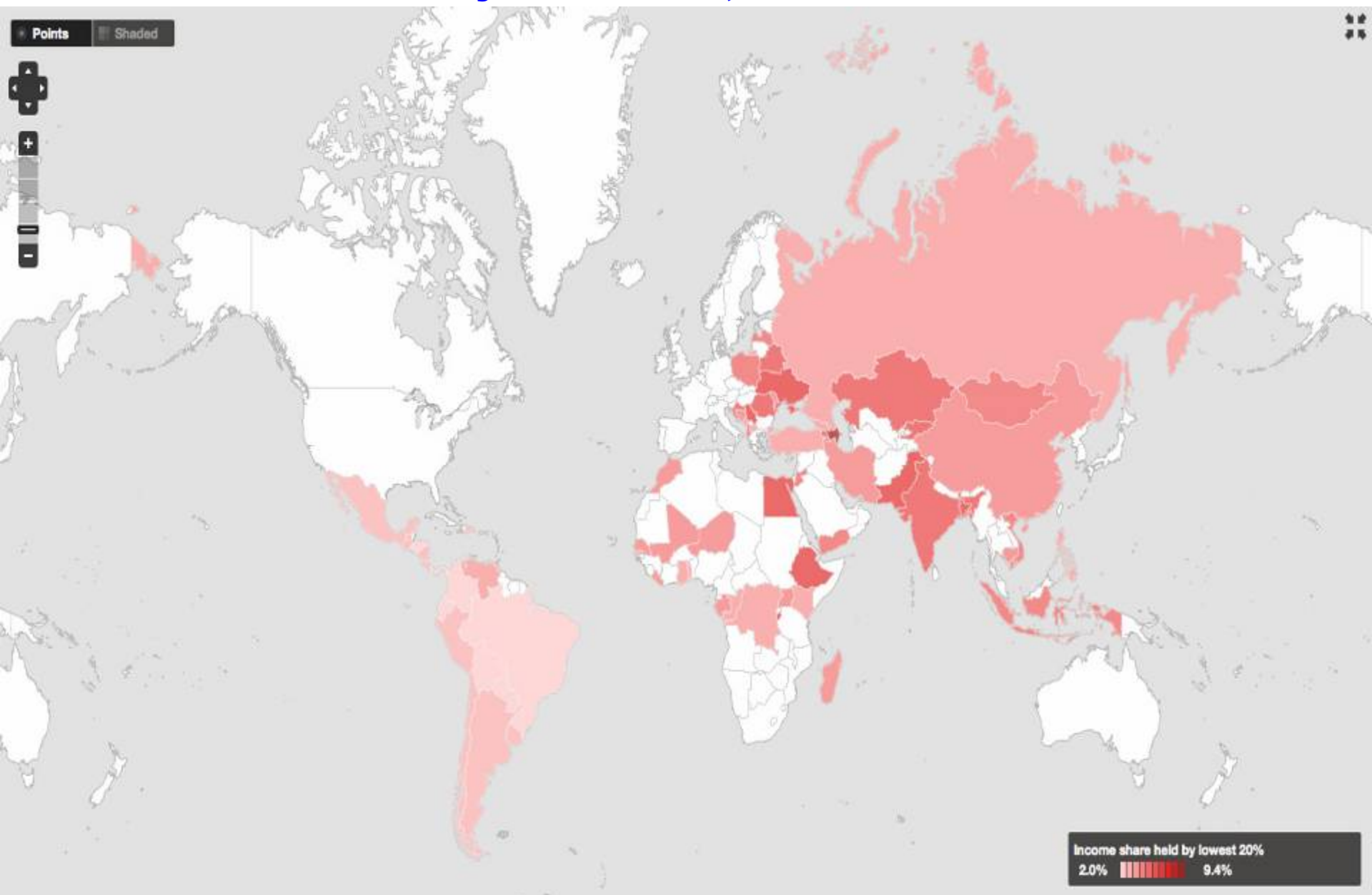
Economic system measurements (economy)

Economic and financial viability

Gini Coefficient

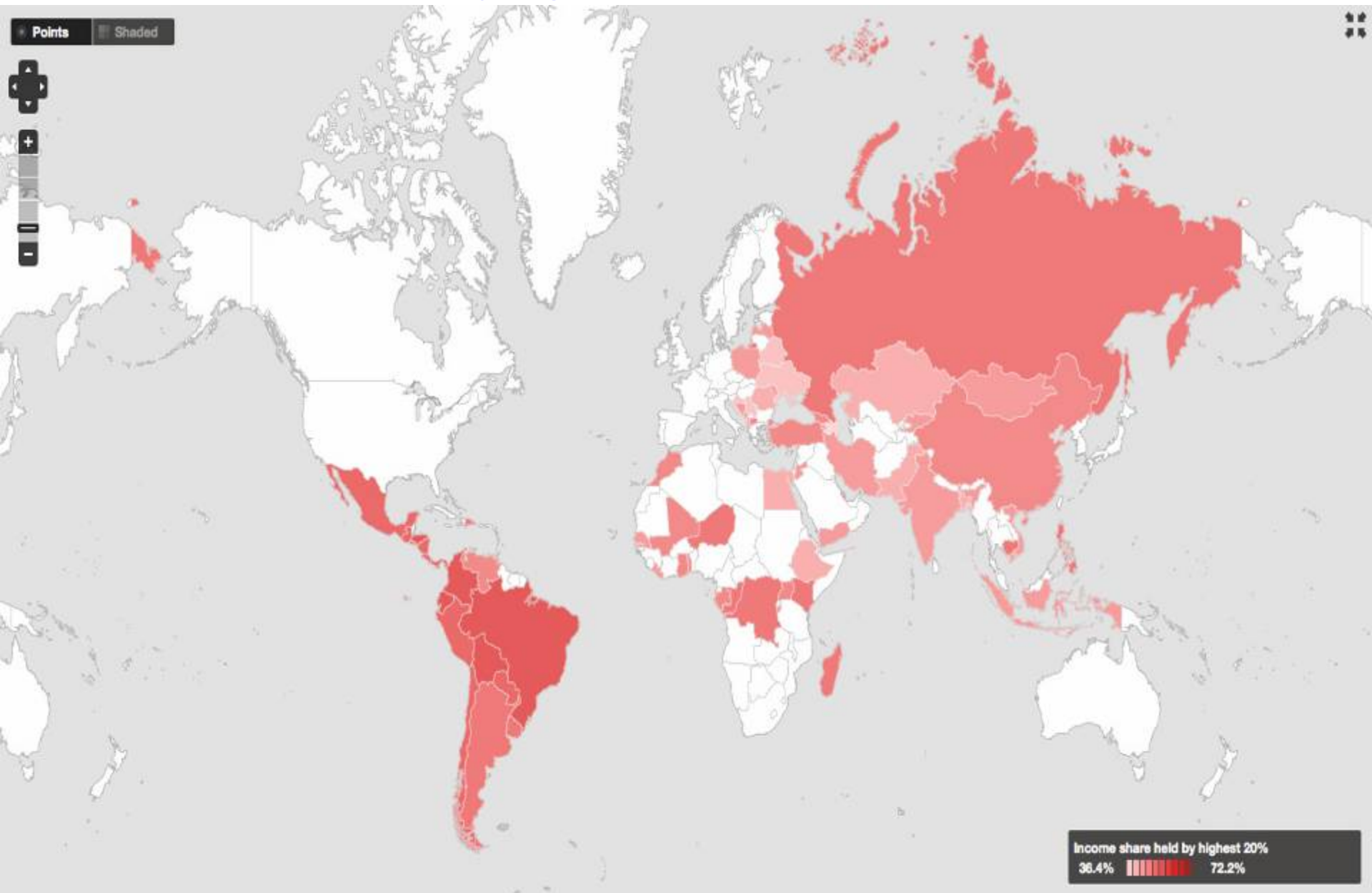


Income share held by lowest 20%, 2010



Source: World Bank, 2011

Income share held by highest 20%, 2010



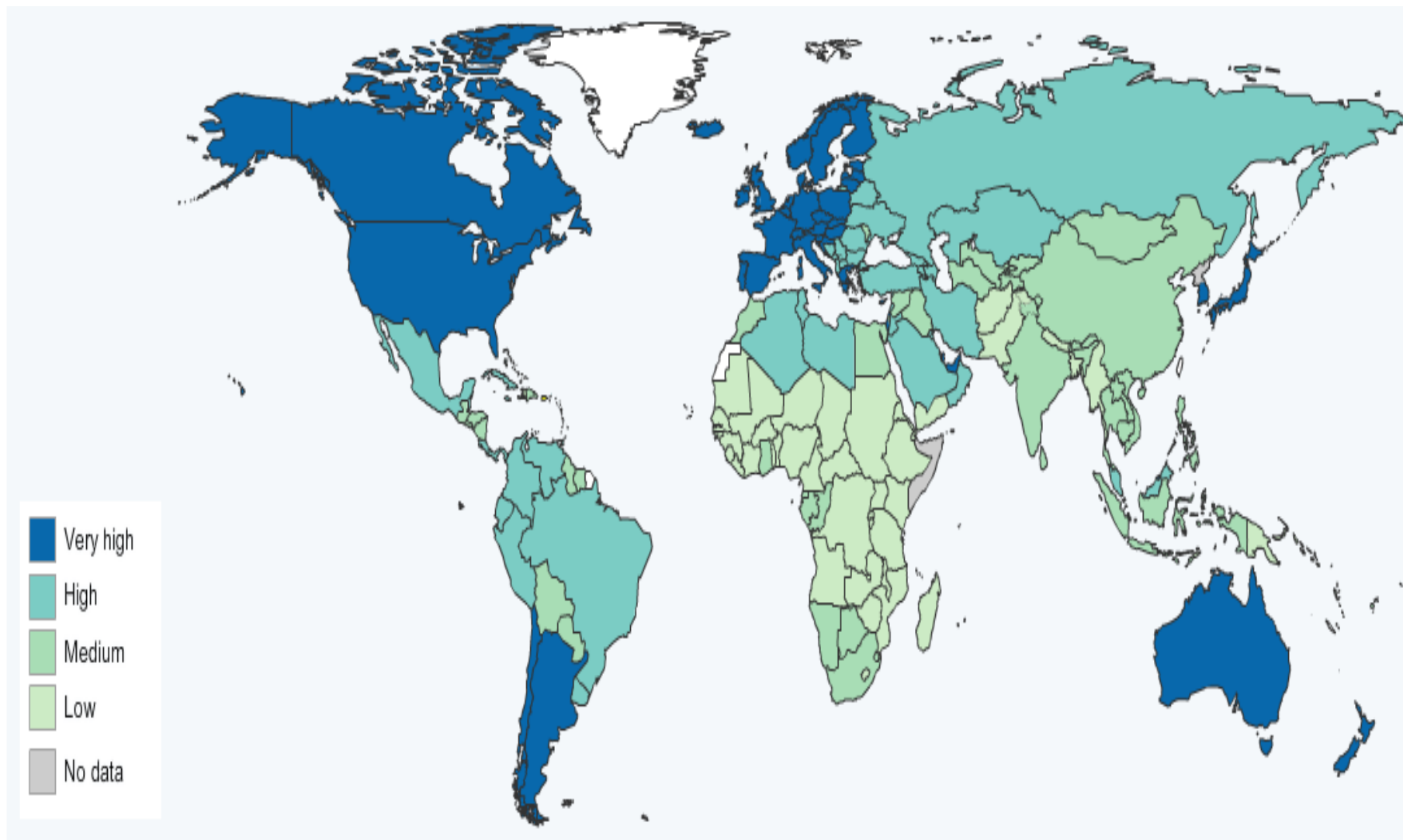
Source: World Bank, 2011

Human Development Index (HDI)

www.hdr.undp.org/en/content/human-development-index-hdi

The **Human Development Index (HDI)** is a composite statistic used to rank countries by level of "human development" and separate "very high human development", "high human development", "medium human development", and "low human development" countries. The Human Development Index (HDI) is a comparative measure of life expectancy, literacy, education and standards of living for countries worldwide. It is a standard means of measuring well-being, especially child welfare. It is used to distinguish whether the country is a developed, a developing or an under-developed country, and also to measure the impact of economic policies on quality of life. There are also HDI for states, cities, villages, etc. by local organizations or companies.































Human Development Index (HDI) value, 2011

































Source: United Nations Development Programme (UNDP), 2011

Competitiveness INDEX

First 30

	Economy	Score ¹	Prev. ²	Trend ³
1	Switzerland	5.81	1	
2	Singapore	5.72	2	
3	United States	5.70	3	
4	Netherlands	5.57	5	
5	Germany	5.57	4	
6	Sweden	5.53	9	
7	United Kingdom	5.49	10	
8	Japan	5.48	6	
9	Hong Kong SAR	5.48	7	
10	Finland	5.44	8	
11	Norway	5.44	11	
12	Denmark	5.35	12	
13	New Zealand	5.31	16	
14	Taiwan, China	5.28	15	
15	Canada	5.27	13	
16	United Arab Emirates	5.26	17	
17	Belgium	5.25	19	
18	Qatar	5.23	14	
19	Austria	5.22	23	
20	Luxembourg	5.20	20	
21	France	5.20	22	
22	Australia	5.19	21	
23	Ireland	5.18	24	
24	Israel	5.18	27	
25	Malaysia	5.16	18	
26	Korea, Rep.	5.03	26	
27	Iceland	4.96	29	
28	China	4.95	28	
29	Saudi Arabia	4.84	25	
30	Estonia	4.78	30	

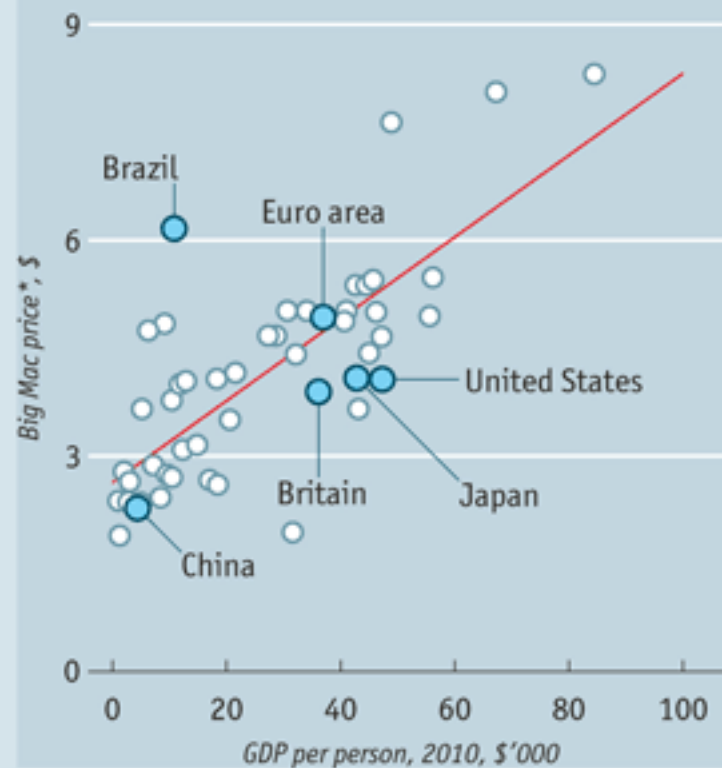
Last 30

100	Ethiopia	3.77	109	
110	Cape Verde	3.76	112	
111	Kyrgyz Republic	3.75	102	
112	Senegal	3.74	110	
113	Uganda	3.69	115	
114	Ghana	3.68	119	
115	Egypt	3.67	116	
116	Tanzania	3.67	120	
117	Paraguay	3.65	118	
118	Zambia	3.60	96	
119	Cameroon	3.58	114	
120	Lesotho	3.57	113	
121	Bolivia	3.54	117	
122	Pakistan	3.49	126	
123	Gambia, The	3.47	123	
124	Benin	3.47	122	
125	Mali	3.46	127	
126	Zimbabwe	3.41	125	
127	Nigeria	3.39	124	
128	Madagascar	3.33	130	
129	Congo, Democratic Rep.	3.29	n/a	
130	Venezuela	3.27	132	
131	Liberia	3.21	129	
132	Sierra Leone	3.16	137	
133	Mozambique	3.13	133	
134	Malawi	3.08	135	
135	Burundi	3.06	136	
136	Chad	2.95	139	
137	Mauritania	2.94	138	
138	Yemen	2.74	n/a	

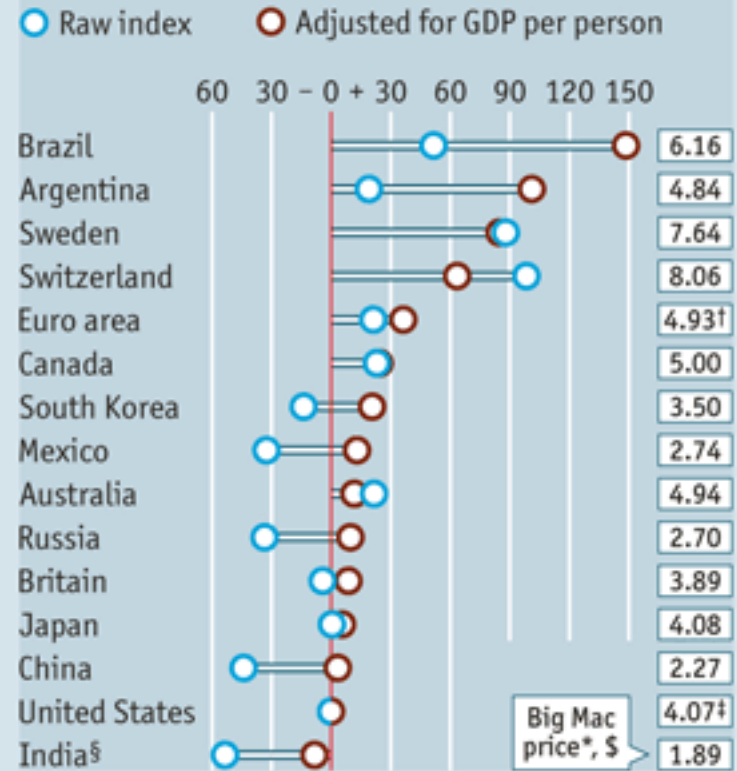
Big Mac Index

Our new improved recipe

Big Mac prices v GDP per person,
July 2011



Big Mac index, local currency under(-)/over(+) valuation against the dollar, %

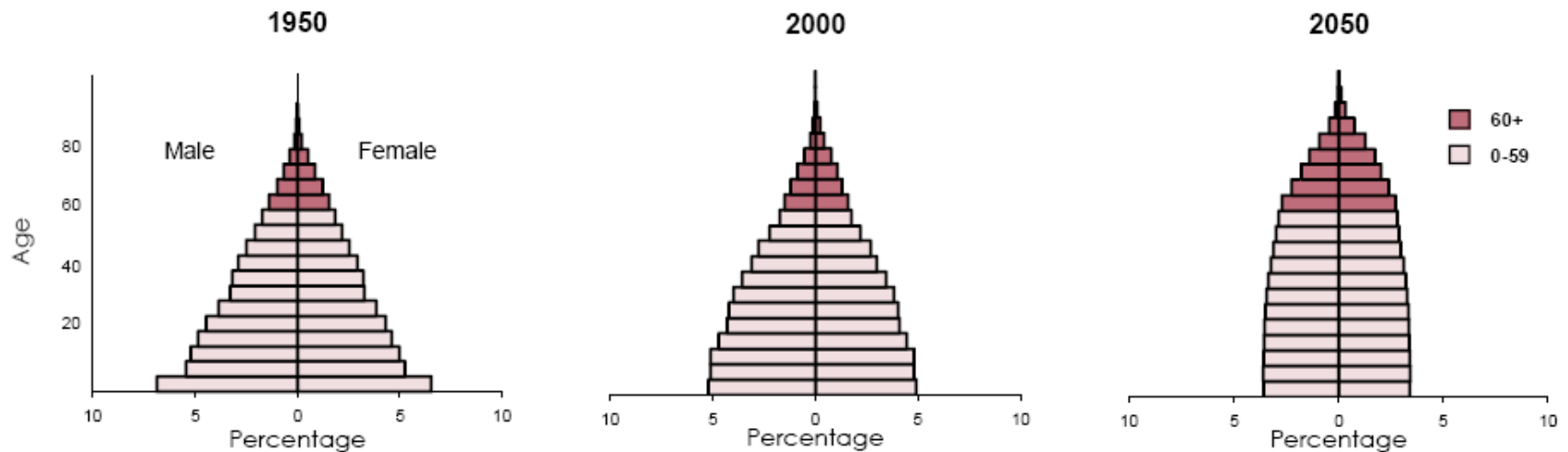


Sources: McDonald's; IMF; *The Economist*

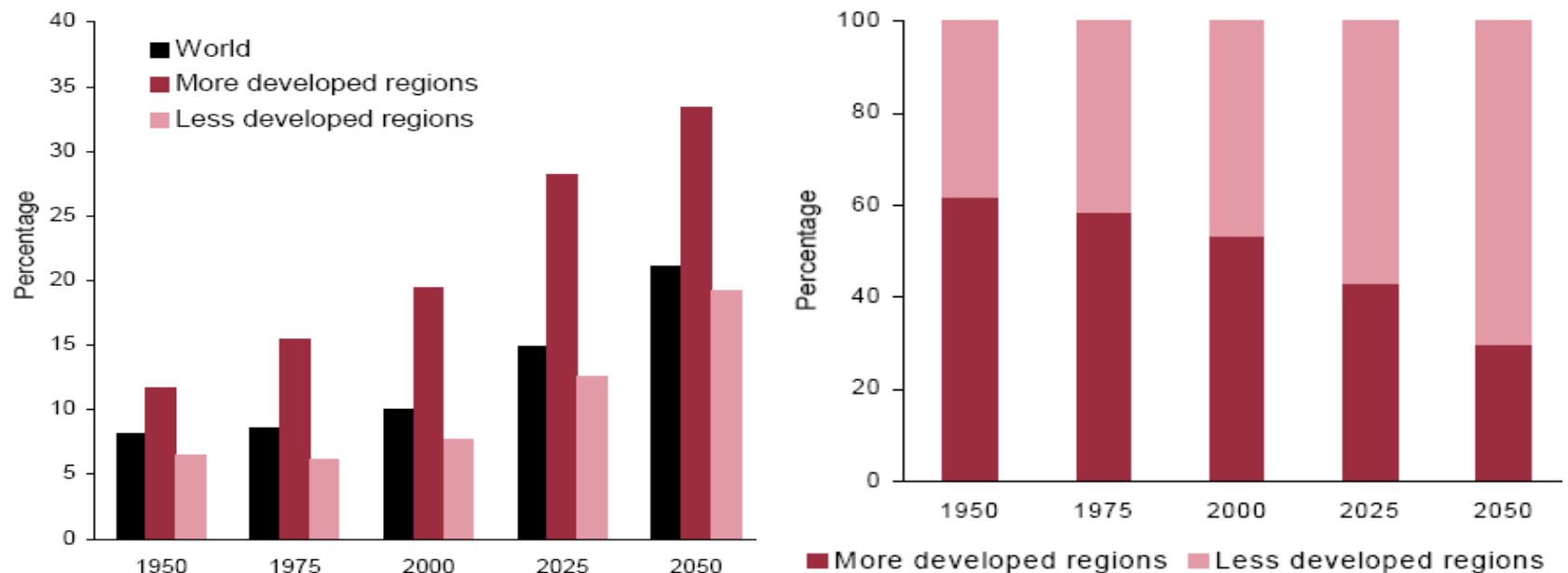
*At market exchange rate (July 25th) †Average of member countries

‡Average of four cities §Maharaja Mac

Population ageing: global population pyramids



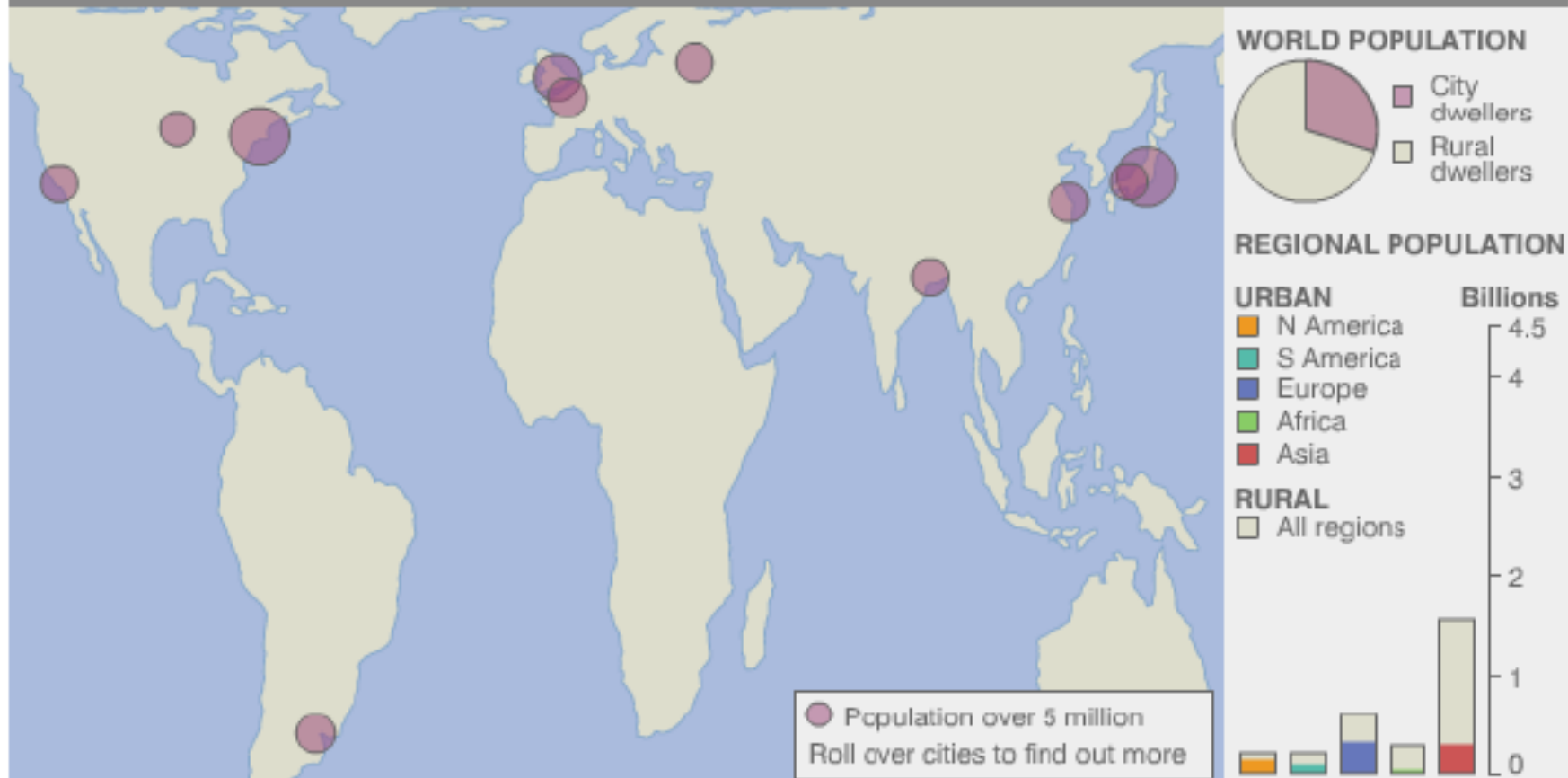
Proportion of population aged 60 and over



Source: UNDESA, World Population Ageing 1950-2050

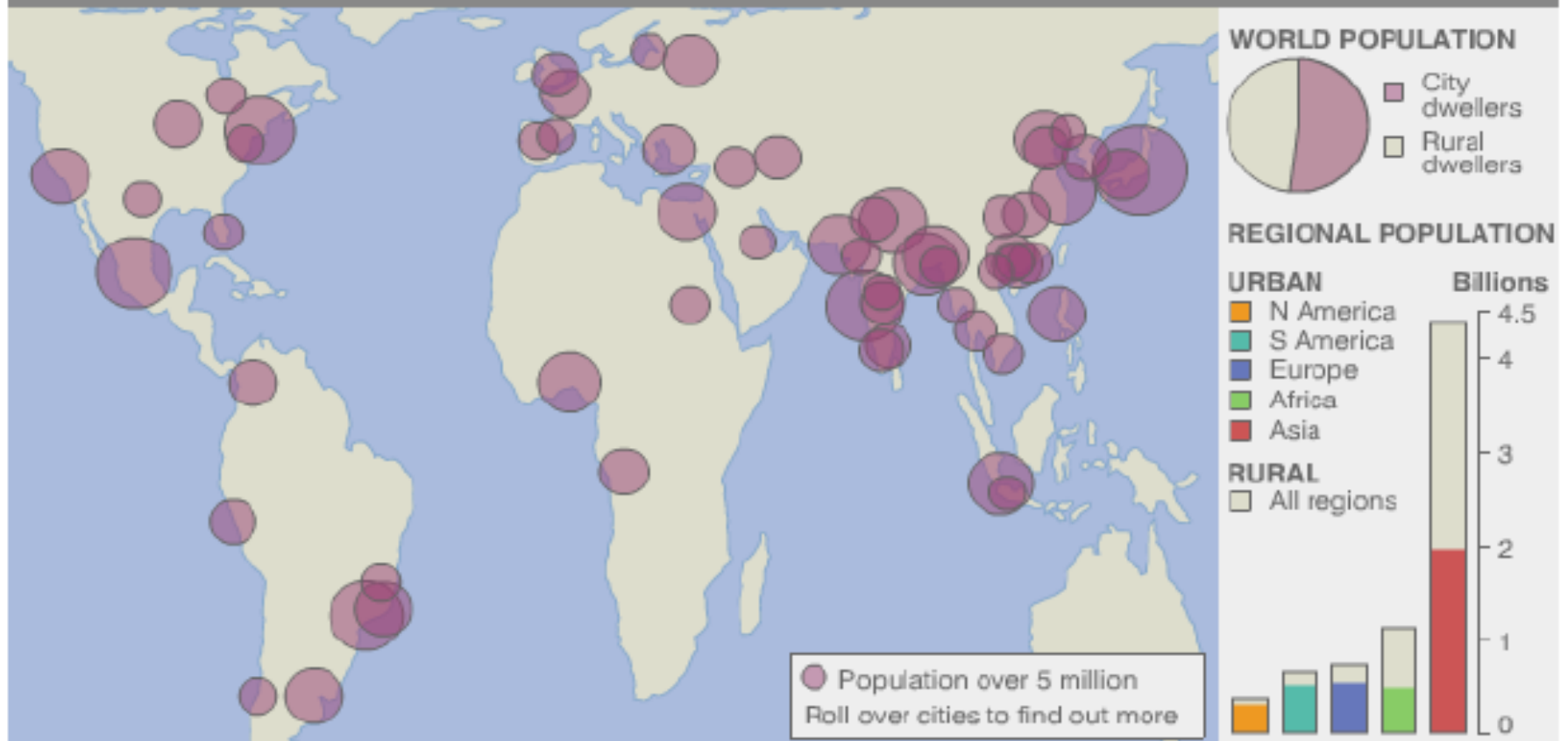
Demographic history of urbanization - 1

1955: Europe and N America lead the way



In 1955, North America and Europe are the most urbanised regions, although Europe has only recently passed the 50% urbanised mark. Urban growth is fastest in Latin America and Africa, although the numbers in Africa remain low. Tokyo has just overtaken New York as the world's biggest city.

2015: African growth fastest - Asian growth biggest



The world's urban population is expected to hit 4bn between 2015 and 2020, about the same time as China becomes more than 50% urbanised. Most of the growth will happen in Africa and Asia, with Africa's urban population growing fastest in percentage terms and Asia seeing the biggest volume of growth.

Economic system measurements (society)

Social security and individual welfare

Criminality, migration, urban/rural population, ageing process...

Happy Planet Index

Genuine Progress Indicator

Some maps from “Le Monde Diplomatique”

Measurements at national and local level

[Social Progress Index](#)

[BES \(ISTAT - Italy\)](#)

[Local Wellbeing Project](#)

[Local Wellbeing Index](#)

[Ecosistema Urbano \(Legambiente – IT\)](#)

[Qualità della vita \(Il Sole 24 Ore - Italy\)](#)

Social Progress Indicator

	score/ value	rank	strength/ weakness		score/ value	rank	strength/ weakness		score/ value	rank	strength/ weakness
Basic Human Needs	91.49	30		Foundations of Wellbeing	90.28	15		Opportunity	76.35	19	
Nutrition and Basic Medical Care	99.08	4		Access to Basic Knowledge	96.89	15		Personal Rights	94.76	20	
Undernourishment	2.50	1		Adult literacy rate	98.85	15		Political rights	36.00	34	
Maternal mortality rate	3.86	6		Primary school enrollment	99.30	28		Freedom of expression	0.93	27	
Child mortality rate	3.30	12		Secondary school enrollment	103.18	1		Access to justice	0.99	1	
Child stunting	1.23	16		Gender parity in secondary enrollment	0.98	46		Freedom of religion	3.70	51	
Deaths from infectious diseases	8.70	2		Access to quality education	3.46	23		Property rights for women	4.89	2	
Water and Sanitation	99.83	12		Access to Information and Communications	86.11	29		Personal Freedom and Choice	74.41	43	
Access to at least basic drinking water	100.00	1		Mobile telephone subscriptions	153.00	1		Vulnerable employment	17.40	52	
Access to piped water	100.00	1		Internet users	61.32	58		Early marriage	0.00	1	
Access to at least basic sanitation facilities	99.28	25		Access to online governance	0.92	8		Satisfied demand for contraception	68.20	74	
Rural open defecation (% of pop.)	0.00	1		Access to independent media	89.50	33		Corruption	50.00	43	
Shelter	94.16	34		Health and Wellness	84.92	15		Inclusiveness	69.54	15	
Access to electricity	100.00	1		Life expectancy at 60	24.65	9		Acceptance of gays and lesbians	62.78	23	
Quality of electricity supply	5.91	34		Premature deaths from non-communicable diseases	202.42	12		Discrimination and violence against minorities	4.80	43	
Household air pollution attributable deaths	0.34	19		Access to essential services	81.16	14		Equality of political power by gender	2.67	24	
				Access to quality healthcare	3.43	26		Equality of political power by socioeconomic position	2.77	24	
Personal Safety	72.91	39		Environmental Quality	93.20	5		Equality of political power by social group	3.60	3	
Homicide rate	0.78	18		Outdoor air pollution attributable deaths	16.49	14		Access to Advanced Education	66.70	8	
Political killings and torture	0.92	41		Wastewater treatment	97.53	18		Years of tertiary schooling	0.45	63	
Perceived criminality	4.00	86		Greenhouse gas emissions	195.35	8		Women's average years in school	14.28	27	
Traffic deaths	8.45	26		Biome protection	17.00	1		Globally ranked universities	71.00	7	
								Percent of tertiary students enrolled in globally ranked universities	80.00	1	