



Advances in SOFI

A Report to the 2008 Millennium Project Planning Committee

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Major SOFI Activities

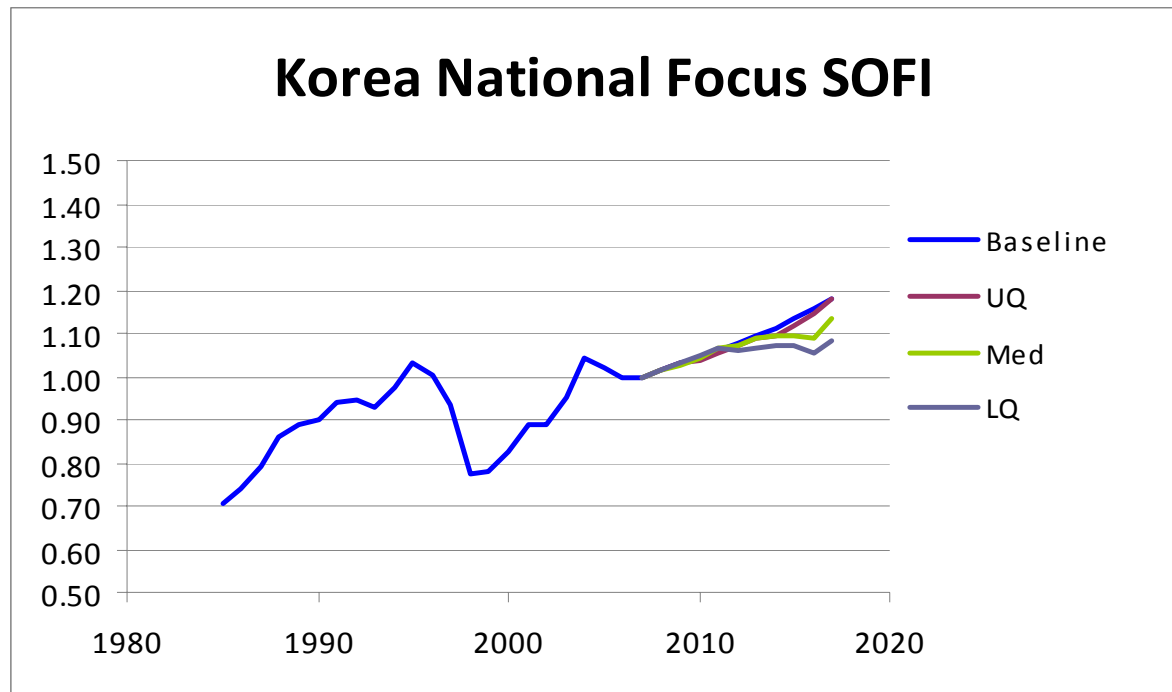
- Completion of a national focus SOFI for S. Korea and S. Africa.
- Tutorials (PowerPoint with audio) were made available on line to assist in the design of national SOFIs.
- Using SOFI to Identify promising policies and actions
- Cooperation with International Futures (IFs) econometric model to develop a proof of concept application of the model to the computation of country SOFI



South Korean SOFI

- Based on RTD
- Judgments from Korean nationals
- Used 14 variables and 22 developments
- Analyzed policy implications

South Korean SOFI





South Korea: Two Futures

A Bright Future

- The value of exports doubles
- GNI/capita exceeds \$22,000 per year (vs. about \$17,000)
- Essentially everyone in the country has access to fresh water
- Population increasing
- Low unemployment — between 3 and 4%
- At least 30% of the seats in parliament are held by women
- Corruption (perceived bribe-taking) is diminishing
- Energy efficiency of the nation's economy improves
- Dependency on foreign sources for the country's energy supply diminishes, to 80% in 10 years vs. 95% currently.



South Korea: Two Futures

A Less Bright Future

- Over 100 days per 1,000 workers are currently lost to strikes each year. Extreme changes are plausible in the future.
- GNI/capita uncertain from \$14,000 to \$30,000 (vs. \$17,000 currently).
- Reunification and global economic disruptions.
- Carbon dioxide emissions could range from 80% to 150% of today's levels.
- The income gap between rich and poor South Koreans grows.
- R&D expenditures, the life blood of the country, is uncertain and depends external economic factors over which the country has little control.



Policy Recommendations

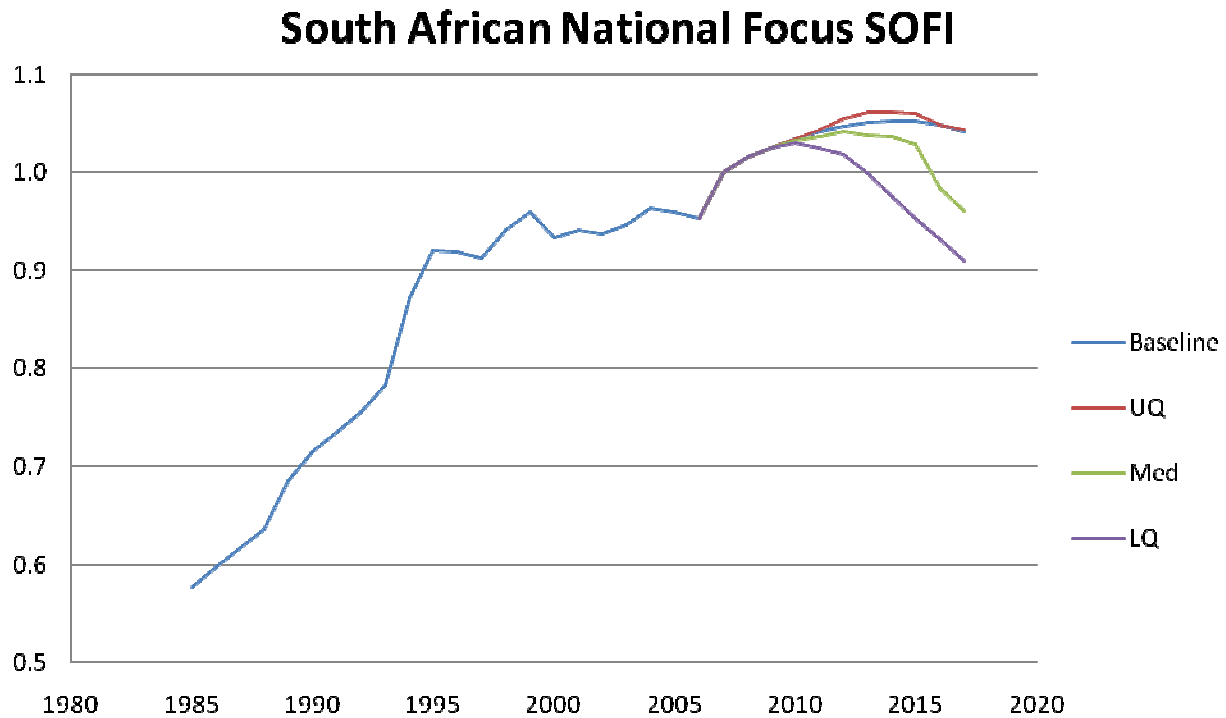
- The “bright national future” be used in setting national goals.
- A system of annual monitoring be established .
- The data from the monitoring system be used to produce annual South Korean SOFIs.
- The list of key future events of this study (and possibly additional variables) be used to test existing and planned national policies.



South African SOFI

- Based on RTD
- Judgments from S African nationals
- Used 28 variables and 8 developments
- Report in preparation

South African SOFI





Tutorials

- <http://www.mpcollab.org/learning/course/view.php?id=3>



Identifying Policies and Actions

- Targeting
- Sensitivity Analysis
- Figure of Merit
- Regression Analysis.



Targeting (fix the “bad” drivers)

- Terrorism (number killed or wounded)
- Temperature anomalies
- Unemployment
- Homicides
- Corruption
- Carbon Dioxide in the atmosphere
- Voting population (% of eligible voters)



Sensitivity Analysis

- Make a series of SOFI runs
 - Zero out probabilities of all developments
 - Then a series of runs in which each development, sequentially, is assumed to have a probability of 100%.
 - The differences are a measure of each development's ability to increase or diminish the future outlook.



Policies from Sensitivity Runs

- Improvers
 - Limit production and proliferation of weapons of mass destruction
 - Improve collective intelligence
 - Low cost anti-aging therapies
 - Debt forgiveness by developed world
 - Advent of a “teachers without borders” movement
- Retarders
 - A pandemic of the scale of HIV/AIDS
 - Decision failures of governments due to inability to manage complex systems.
 - Increasing CO2
 - Terrorists use of nuclear weapons
 - Global economic depression



Figure of Merit

- A figure of merit is highest :
 - for developments that produce the greatest positive improvement in SOFI and the least negative decrement in the SOFI in the shortest time at the least cost.



Positive Cost Benefit

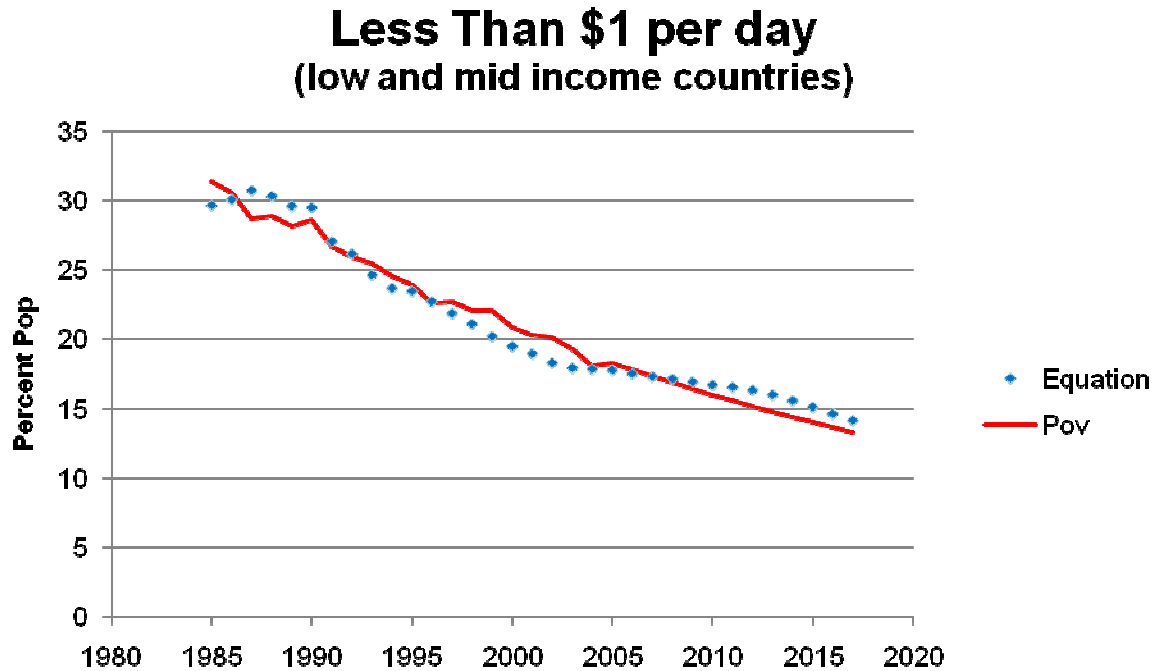
	ITEM	Positive FOM
3	Advent of a “teachers without borders” movement (50,000 new teachers in the field)	416
55	Legalization of some currently outlawed drugs.	366
52	Invention and commercialization of new types of arms and surreptitious detection devices used to interdict terror activities.	335
11	Cell phone evolution and wireless Internet leads to massive increases in Internet access.	310
81	Simple, cheap, long lasting contraceptives are available.	273
39	Implementation of effective means for limiting production and proliferation of WMD	266
2	A very good, fast \$150 laptop computer becomes available everywhere.	251
13	Convergence in communications and nanobiotechnology significantly improve public health	240
69	Several countries adopt a goal of improving their nation's collective intelligence	226



Cost Benefit of Avoidance

	ITEM	benefit of avoidance
43	Increasing decision failures of governments	686
5	At least 10 countries with low population growth introduce effective policies designed to increase birth rates to avoid population implosion	364
4	A pandemic of the scale of HIV/AIDS	340
33	Global economic depression	282
59	Major terrorist attack lead to wide spread economic depression	257
91	The age of nuclear proliferation is here:	237
61	Many countries stiffen limitations on number of refugees they will accept	187
55	Legalization of some currently outlawed drugs.	135
71	Policies to stop terrorism reverse the trend toward liberalization of civil liberties	135
58	Major computer fraud discovered	126

Regression Analysis



Equation relates poverty to unemployment and population



Proof of Concept with IFs

- The IFs model
 - Is a multi equation model that links economic, demographic, and social measures
 - Covers 182 countries
 - Uses both systems dynamic relationships (flows and stocks) and econometric relationships
 - Includes “cohort-component systems for population; markets for production, exchange, and consumption; and social accounting matrices for financial flows



The differences

- IFs had 20 vs 26 variables
- Some historical data used by IFs does not match the historical data used by MP
- The forecasted values of some of the variables were different.
- Since Trend Impact Analysis is not used in the IFs model, the consequences of future developments must still be handled on an ad hoc basis.

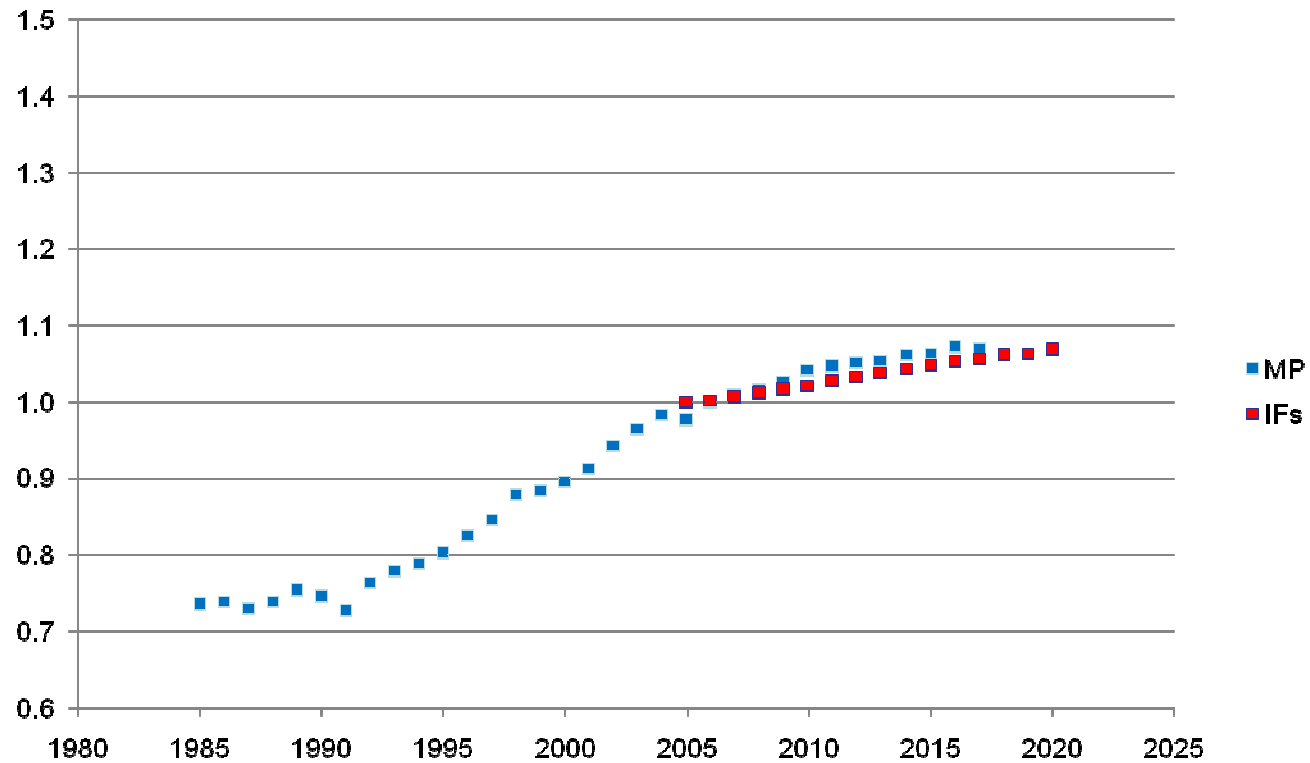


The Missing Variables

- Number of refugees displaced from the country (percent of national population)
- People killed or injured in terrorist attacks
- People Voting in Elections
- Physicians (per 1,000 people)
- Seats held by women in national parliament
- Unemployment, total (percent of national labor force)

SOFI by Both Methods

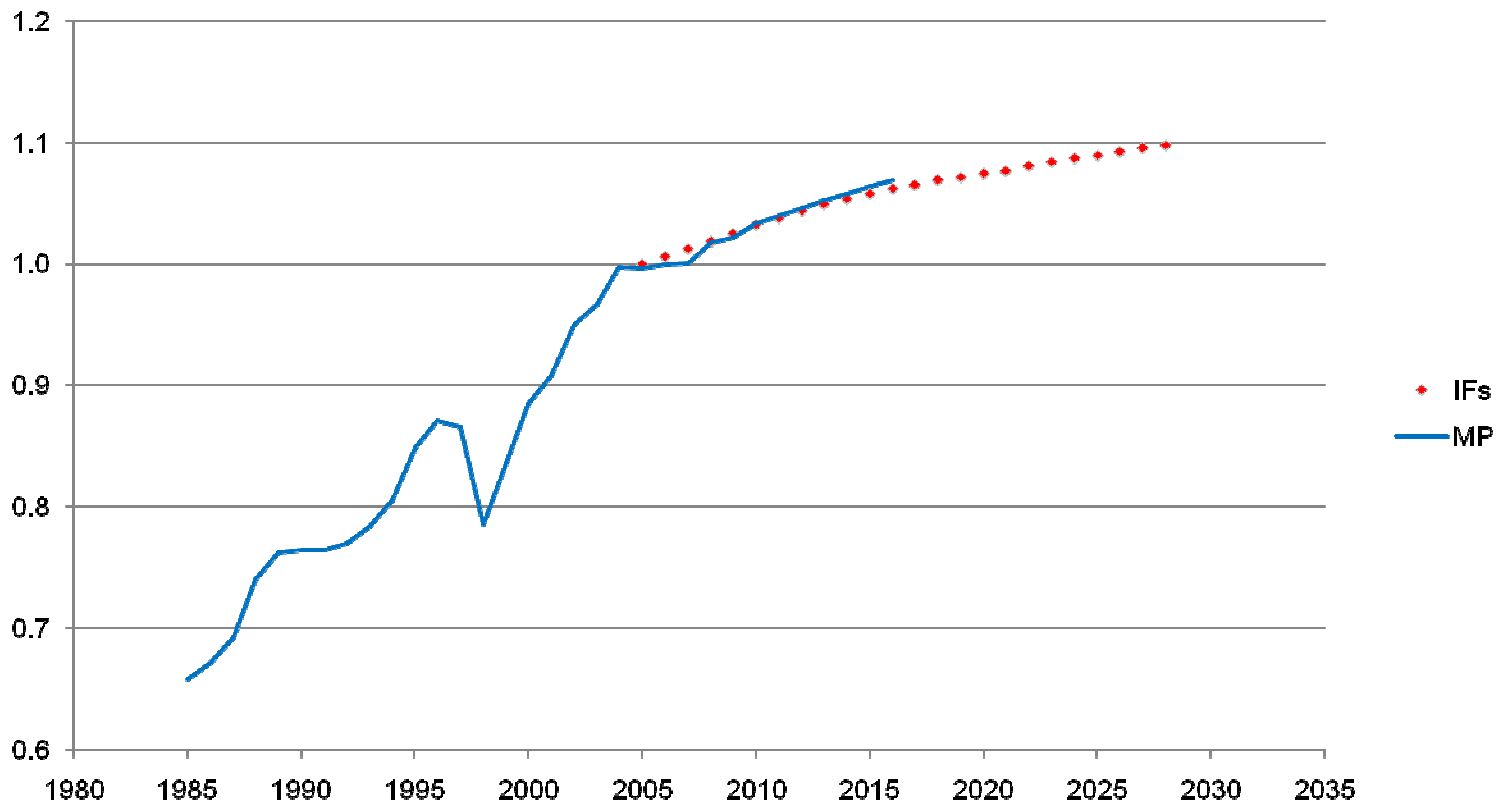
Global State of the Future Index





South Korean SOFI


**S Korea SOFI
IFs vs. MP national comparison**





Next Steps with IFs

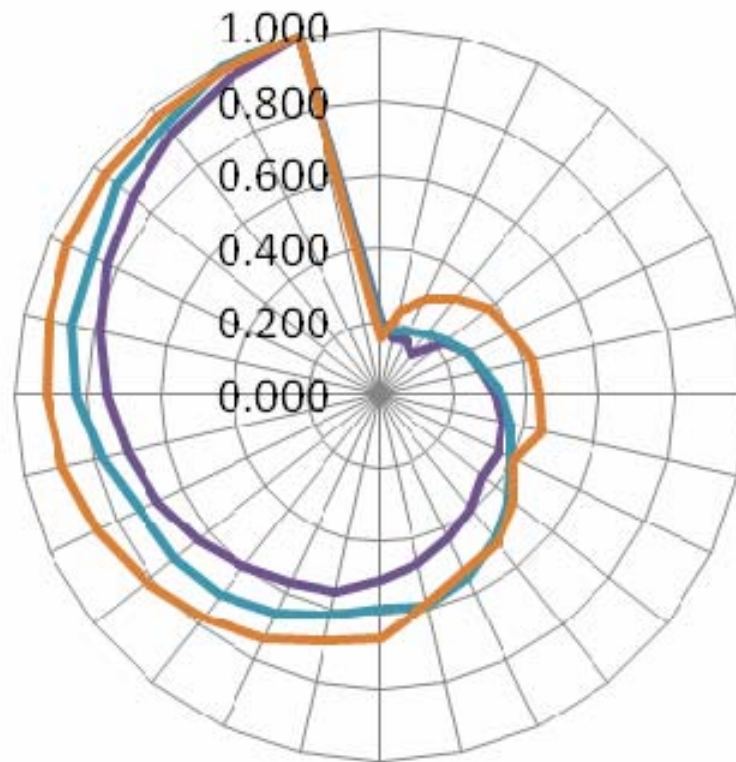
- Study new ways to present the data.
- Add other variables and improve historical data coverage
- Move toward an annual or biennial "world SOFI report" listing all (182) nations and tracking improvements in their future outlook.
- Funding should be pursued to further this work.



Health, Wealth, and Intellect

Health, Intellect, Wealth Variables

1990-2017

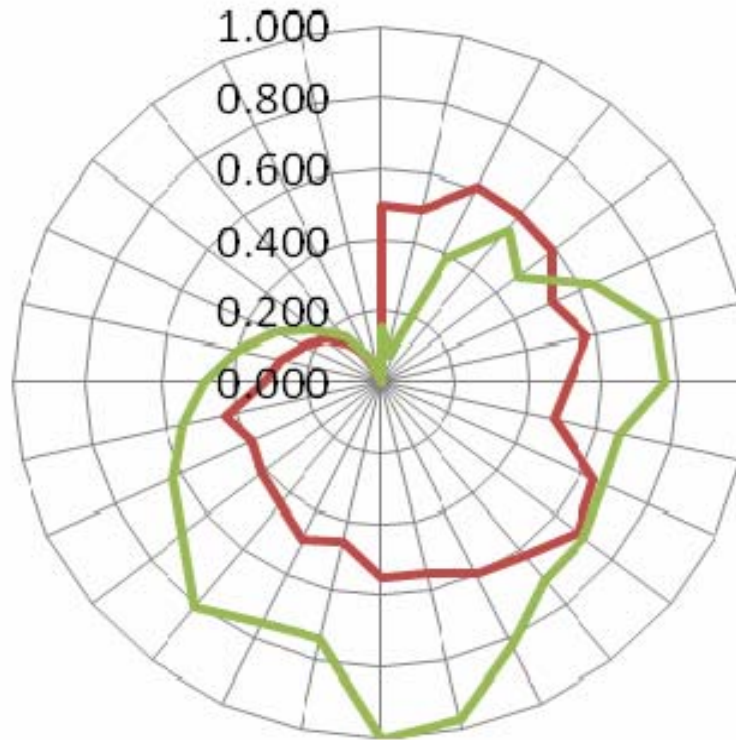




Security, Physical

Physical and Security Variables

1990-2017





Gapminder

[http://graphs.gapminder.org/communityproxy/ChartDataServlet?key=pYKJqA6d8LmiH2GY72IBwYQ#\\$majorMode=chart\\$;shi=t;ly=2003;lb=f;il=t;fs=11;al=30;stl=t;st=t;nsI=t;se=t\\$wst;tts=C\\$ts;sp=6;ti=2006\\$zpv;v=1\\$inc_x;mmid50;dataMax=1458024460\\$map_y;scale=lin;dataMin=0.624;dataMax=1.219\\$map_s;sma=50;smi=2\\$cd;bd=0\\$inds=](http://graphs.gapminder.org/communityproxy/ChartDataServlet?key=pYKJqA6d8LmiH2GY72IBwYQ#$majorMode=chart$;shi=t;ly=2003;lb=f;il=t;fs=11;al=30;stl=t;st=t;nsI=t;se=t$wst;tts=C$ts;sp=6;ti=2006$zpv;v=1$inc_x;mmid50;dataMax=1458024460$map_y;scale=lin;dataMin=0.624;dataMax=1.219$map_s;sma=50;smi=2$cd;bd=0$inds=)

[http://spreadsheets.google.com/ccc?key=pYKJqA6d8LmiH2GY72IBwYQ&hl==XCOORDS;iid=phAwcNAVuyj0XOoBL_n5tAQ;by=ind\\$inc_y;mmid=YCOORDS;iid=pYKJqA6d8LmjEQMR1Omw7Qw;by=ind\\$inc_s;uniValue=20;iid=phAwcNAVuyj1jiMAkmq1iMg;by=ind\\$inc_c;uniValue=255;gid=CATID0;by=grp\\$map_x;scale=lin;dataMin=en](http://spreadsheets.google.com/ccc?key=pYKJqA6d8LmiH2GY72IBwYQ&hl==XCOORDS;iid=phAwcNAVuyj0XOoBL_n5tAQ;by=ind$inc_y;mmid=YCOORDS;iid=pYKJqA6d8LmjEQMR1Omw7Qw;by=ind$inc_s;uniValue=20;iid=phAwcNAVuyj1jiMAkmq1iMg;by=ind$inc_c;uniValue=255;gid=CATID0;by=grp$map_x;scale=lin;dataMin=en)