

Human Development Index (HDI) in Time Distance Perspective 1980-2012

**The time dimension for HDI can be presented and
analysed in a new complementary way**

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HDI analysis needs a two-dimensional dynamic framework: static disparity and time distance perspective

- For development strategy and for policy considerations we need a **more realistic dynamic picture in both dimensions**
- **Time series of HDI are now available for selected years for the period 1980-2012** in the UNDP HDR 2013
- **From the same data** a broader dynamic view can be added if the **usual static statistical measures are complemented with** S-time-matrix format, S-time-distance and S-time-step measures to look into **intertemporal changes in composite indicators**
- **S-time-distance** as a time measure of the gap between compared units complements existing static measures of disparity
- **S-time-step** gives an alternative way to look at the dynamics of change (in addition to the growth rate) and provides an impression of the difficulty of increasing the value of the HDI in the past

Time distance concept organises the same data from HDR 2013 in a way that data are arranged by selected levels of indicators showing in which year these levels of the indicators were achieved by given country.

The result is a LEVEL-TIME MATRIX, which is easily understood by everybody

One can immediately observe several stories:

1. The observed time matrix in yellow colour shows the range of values achieved for a given country over the period from available data.

This allows for a quick level comparison at a glance:

- of the situation across the human development groups and individual countries for a given indicator or across indicators for a given unit
- of how many steps over levels of indicators a given country or indicator have been achieved (which is an additional indication of the dynamics)

2. The year presented in **bold** show the latest available year in time matrix for a given unit. It can help to quickly observe whether there was a noticable decrease in the observed period.

Technically, if there are more intersections for a given level of the indicator the last year is shown.

Level	HDI				Non-income HDI				Income Index			
	Human Development				Human Development				Human Development			
	Very high	High	Medium	Low	Very high	High	Medium	Low	Very high	High	Medium	Low
0.92					2009							
0.91					2006							
0.90	2010				2004							
0.89	2005				2002							
0.88	2003				2000							
0.87	2001				1999							
0.86	1999				1997							
0.85	1997				1995				2004			
0.84	1995				1994				2000			
0.83	1993				1992				1997			
0.82	1991				1990				1993			
0.81	1988				1989				1989			
0.80	1986				1987				1986			
0.79	1984				1985				1984			
0.78	1982				1983				1981			
0.77					1981							
0.76												
0.75					2012							
0.74	2010				2009							
0.73	2007				2007							
0.72	2006				2006							
0.71	2004				2004							
0.70	2003				2003							
0.69	2001				2002							
0.68	1999				2000							
0.67	1999				1999				2012			
0.66	1996				1997				2010			
0.65	1994				1996				2006			
0.64	1991				1994				2004			
0.63	1989				1993				2003			
0.62	1987				1991				2001			
0.61	1985				2009							
0.60	2010				2007							
0.59	2008				2006							
0.58	2007				2005							
0.57	2006				2004							
0.56	2005				2003							
0.55	2004				2002							
0.54	2003				2001							
0.53	2001				1999							
0.52	2000				1998							
0.51	1999				1996							
0.50	1997				1994							
0.49	1996				1993							
0.48	1994				1991							
0.47	1993				1989							
0.46	1991				1988							
0.45	1990				1986							
0.44	1988				1985							
0.43	1987				1983							
0.42	1985				1982							
0.41	1983				1980							
0.40	2010											
0.39	2008											
0.38	2007											
0.37	2006											
0.36	2005											
0.35	2004											
0.34	2003											
0.33	2002											
0.32	2001											
0.31	1999											

A quick visual overview over the four HD groups (trends 1980-2012)

Time matrix: time when a given indicator level was attained

The range of values over the three decades for the four HD groups was 0.31 - 0.92. There were substantial improvements, but disparities remain very large.

S-time-distance gives a rough impression of the magnitude of world inequality expressed as gap in time. The time distance between the very high and the low group of about 74 years for non-income HDI, about 82 years for HDI and about 100 years for income index are relevant statistical descriptive measures of the situation easily understandable by everyone, balancing the static view.

The WORLD view over 4 HD groups and 4 indices (trends 1980-2012)

Indicator	Human Development Index				Health Index				Education Index				Income Index			
HD group	Very high	High	Medium	Low	Very high	High	Medium	Low	Very high	High	Medium	Low	Very high	High	Medium	Low
0.94					2009											
0.93					2005											
0.92					2003											
0.91					2000				2009							
0.90	2010				1997				2008							
0.89	2005				1994				2005							
0.88	2003				1991				2004							
0.87	2001				1988				2002							
0.86	1999				1985				2001							
0.85	1997				1982				1999				2004			
0.84	1995								1998				2000			
0.83	1993					2012			1997				1997			
0.82	1991					2009			1996				1993			
0.81	1988					2007			1995				1989			
0.80	1986					2005			1994				1986			
0.79	1984					2003			1992				1984			
0.78	1982					2000			1991				1981			
0.77						1998	2010		1990							
0.76						1995	2008		1988							
0.75		2010				1992	2006		1987							
0.74		2007				1989	2003		1985	2011						
0.73		2006				1987	2000		1984	2009						
0.72		2004				1985	1998		1982	2008						
0.71		2003				1983	1995		1980	2006						
0.70		2001				1981	1992			2005						
0.69		1999					1990			2004						
0.68		1996					1988			2002						
0.67		1994					1986			2001						
0.66		1991					1984			2000						
0.65		1989					1982			1999						
0.64		1987								1998						
0.63		1985	2012							1996						
0.62		1983	2008							1995						
0.61		1981	2007							1994						
0.60			2006							1993						
0.59			2005					2011		1992						
0.58			2004					2009		1991						
0.57			2003					2008		1990						
0.56			2001					2006		1988						
0.55			2000					2005		1987						
0.54			1999					2003		1986	2009					
0.53			1997					2001		1985	2008					
0.52			1996					2000		1984	2007					
0.51			1994					1996		1983	2006					
0.50			1993					1993		1982	2005					
0.49			1991					1990		1981	2004					
0.48			1990					1987		2003	2003					
0.47			1988					1984		2002	2002					
0.46			1987					1981		2001	2001					
0.45			1985	2010						1999	1999					
0.44			1983	2008						1998	1998					
0.43			1982	2007						1997	1997					
0.42			1980	2006						1995	1995					
0.41				2004						1994	1994					
0.40				2003						1993	1993					
0.39				2002						1992	1992					
0.38				2001						1990	1990	2012				
0.37				1999						1989	1989	2009				
0.36				1996						1987	1987	2007				
0.35				1993						1986	1986	2006				
0.34				1990						1984	1984	2005				
0.33				1987						1983	1983	2004				
0.32				1984						1982	1982	2003				
0.31				1981						1980	1980	2002				
0.30												2001				
0.29												2000				
0.28												1998				
0.27												1996				
0.26												1995				
0.25												1993				
0.24												1991				
0.23												1989				
0.22												1988				
0.21												1986				
0.20												1984				
0.19												1982				
												1980				

Large gaps in income levels and large time distances

Health Index for medium HD group is leading the low HD group by more than 32 years

For Health Index the time distances between the HD groups are more than 32 years, 12 years, and more than 32 years

For Education Index the time distances between the HD groups are 26 years, 21 years, and 22 years

For HDI the time distances between the HD groups are more than 32 years, 25 years, and 23 years

For Income Index the respective time distances between the HD groups are the largest

The WORLD view over 4 indices and 4 HD groups (trends 1980-2012)

Indicator	Very high human development				High human development				Medium human development				Low human development			
	HDI	Health Index	Education Index	Income Index	HDI	Health Index	Education Index	Income Index	HDI	Health Index	Education Index	Income Index	HDI	Health Index	Education Index	Income Index
0.94		2009														
0.93		2005														
0.92		2003														
0.91		2000	2009													
0.90	2010	1997	2008													
0.89	2005	1994	2005													
0.88	2003	1991	2004													
0.87	2001	1988	2002													
0.86	1999	1985	2001													
0.85	1997	1982	1999	2004												
0.84	1995		1998	2000		2012										
0.83	1993		1997	1997		2009										
0.82	1991		1996	1993		2007										
0.81	1988		1995	1989		2005										
0.80	1986		1994	1986		2003										
0.79	1984		1992	1984		2000										
0.78	1982		1991	1981		1998										
0.77			1990			1995				2010						
0.76			1988			1992				2008						
0.75			1987			1989				2006						
0.74			1985		2010	1987				2003						
0.73			1984		2007	1985	2011			2000						
0.72			1982		2006	1983	2009			1998						
0.71			1980		2004	1981	2008			1995						
0.70					2003		2006			1992						
0.69					2001		2005	2012		1990						
0.68					1999		2004	2010		1988						
0.67					1996		2002	2006		1986						
0.66					1994		2001	2004		1984						
0.65					1991		2000	2003		1982						
0.64					1989		1999	2001								
0.63					1987		1998		2012							
0.62					1985		1996		2010							
0.61					1983		1995		2008							
0.60					1981		1994		2007					2011		
0.59							1993		2006					2009		
0.58							1992		2005		2012			2008		
0.57							1991		2004		2011			2006		
0.56							1990		2003		2010			2005		
0.55							1988		2001		2009			2003		
0.54							1987		2000		2008			2001		
0.53							1986		1999		2007			2000		
0.52							1985		1997		2006			1996		
0.51							1983		1996		2005			1993		
0.50							1982		1994		2004			1990		
0.49							1981		1993		2003			1987		
0.48									1991		2002			1984		
0.47									1990		2001			1981		
0.46									1988		1999					
0.45									1987		1998		2010			
0.44									1985		1997		2008			
0.43									1983		1995		2007			
0.42									1982		1994		2006			
0.41									1980		1993		2004			
0.40											1992		2003			
0.39											1991		2002			
0.38											1990		2001			
0.37											1989		1999		2012	2009
0.36											1987		1998		2007	2007
0.35											1986		1996		2005	
0.34											1985		1993		2004	
0.33											1984		1990		2002	
0.32											1983		1987		1997	
0.31											1982		1984			
0.30											1980		1981			
0.29																
0.28																
0.27																
0.26																
0.25																
0.24																
0.23																
0.22																
0.21																
0.20																
0.19																

The Health Index is for both groups more than 32 years ahead of the levels for the Income and Education Index

The time distances between the levels of the three indices for averages for very high group are much smaller than for other groups: Education Index is lagging behind Health Index 9 years and Income Index for 22 years; the lag of Income Index behind Education is low (5 years)

Education Index is lagging behind Health Index 24 years and Income Index for more than 32 years; the lag of Income Index behind Education is low

In general Health Index is the highest component, followed by Education and Income (for MHD in LHD Income is higher than Education)

S-time-step (in years) as an additional measure of dynamics of HDI

S-time-step: how many years were needed to reach the next level of indicator

HDI Level	Human development				Europe and Central Asia	Latin America and the Caribbean	East Asia and the Pacific	Arab States	South Asia	Sub-Saharan Africa	World
	Very high	High	Medium	Low							
0.90	3.7										
0.89	2.3										
0.88	2.3										
0.87	2.1										
0.86	2.0										
0.85	2.0										
0.84	2.0										
0.83	2.0										
0.82	2.2										
0.81	2.3										
0.80	2.3										
0.79	2.3										
0.78											
0.77					3.5						
0.76					2.0						
0.75		2.0			1.4						
0.74		1.6			1.5	2.8					
0.73		1.6			1.5	2.0					
0.72		1.7			1.5	1.4					
0.71		1.7			10.4	1.9					
0.70		2.1			2.0	2.0					
0.69		2.6			2.0	1.9					2.5
0.68		2.6			2.0	1.7	1.8				1.8
0.67		2.6			2.0	1.7	1.3				1.8
0.66		2.2				1.7	1.3				1.9
0.65		2.0				1.7	0.9	2.6			1.8
0.64		2.0	2.1			1.7	0.9	2.0			2.5
0.63		2.0	1.4			1.8	1.1	1.7			2.6
0.62		2.0	1.4			2.0	1.2	1.3			2.6
0.61			1.0			2.0	1.2	1.3			2.6
0.60			1.0			2.0	1.2	1.3			2.6
0.59			1.2			2.0	1.2	1.4			2.6
0.58			1.3				1.2	1.5			2.6
0.57			1.3				1.2	1.5			
0.56			1.3				1.2	1.5			
0.55			1.5				1.2	1.5			
0.54			1.5				1.2	1.5	1.4		
0.53			1.5				1.2	1.5	1.4		
0.52			1.5				1.2	1.4	1.2		
0.51			1.5				1.3	1.3	1.1		
0.50			1.5				1.4	1.4	1.1		
0.49			1.5				1.4	1.3	1.1		
0.48			1.6				1.4	1.3	1.1		
0.47			1.6				1.4	1.4	1.9	1.8	
0.46			1.6	1.6			1.4	1.3	1.9	1.6	
0.45			1.6	1.5			1.4		1.9	1.2	
0.44			1.6	1.1					1.9	1.3	
0.43			1.6	1.2					1.9	1.9	
0.42				1.3					1.7	1.8	
0.41				1.3					1.6	3.7	
0.40				1.3					1.6	5.5	
0.39				2.1					1.6	5.0	
0.38				2.9					1.6	4.8	
0.37				2.9					1.6		
0.36				2.9							
0.35				2.9							
0.34				2.9							
0.33				2.9							
0.32											

On the average for the three HD groups (other than MHD) S-time-step for HDI was between 2 and 2.3 years

In this region only 1.3 years were needed to increase one level of the HDI

The greatest dynamics was in medium HD group, which needed 1.4 years to increase one level of the HDI

S-time-step: how many years were needed to reach the next level of indicator

A quick visual overview of dynamics over all human development groups (trends 1980-2012)

Indicator	Very high human development				High human development				Medium human development				Low human development			
	HDI	Health Index	Education Index	Income Index	HDI	Health Index	Education Index	Income Index	HDI	Health Index	Education Index	Income Index	HDI	Health Index	Education Index	Income Index
0.94		3.3														
0.93		2.7														
0.92		2.6														
0.91		2.9	1.8													
0.90	4.2	2.9	2.5													
0.89	2.4	2.9	1.4													
0.88	2.3	3.0	1.4													
0.87	2.1	3.0	1.4													
0.86	2.0	3.0	1.3													
0.85	2.0		1.2	3.8												
0.84	2.0		1.2	3.7			2.5									
0.83	2.0		1.2	3.7			2.0									
0.82	2.2		1.2	3.6			2.2									
0.81	2.3		1.2	2.9			2.2									
0.80	2.3		1.2	2.9			2.2									
0.79	2.3		1.2	2.9			2.8									
0.78			1.2				2.9									
0.77			1.6				2.9			2.4						
0.76			1.6				2.6			2.3						
0.75			1.6		2.2		2.1			2.7						
0.74			1.6		1.6		2.1	2.4		2.8						
0.73			1.6		1.5		2.1	1.1		2.7						
0.72			1.6		1.7		2.1	1.5		2.7						
0.71					1.7			1.1		2.6						
0.70					2.1			1.3		2.0						
0.69					2.6			1.3	2.5	2.0						
0.68					2.6			1.3	1.6	2.0						
0.67					2.6			1.2	1.9	2.0						
0.66					2.2			1.2	1.9	2.0						
0.65					2.0			1.2								
0.64					2.0			1.1								
0.63					2.0			1.2	2.1							
0.62					2.0			1.1								
0.61								1.2								
0.60								1.2								
0.59								1.1								
0.58								1.2								
0.57								1.2								
0.56								1.2								
0.55								1.2								
0.54								1.2								
0.53								1.2								
0.52								1.2								
0.51								1.2								
0.50								1.2								
0.49								1.5								
0.48								1.6								
0.47								1.6								
0.46								1.6								
0.45								1.6								
0.44								1.6								
0.43								1.6								
0.42								1.6								
0.41																
0.40																
0.39																
0.38																
0.37																
0.36																
0.35																
0.34																
0.33																
0.32																
0.31																
0.30																
0.29																
0.28																
0.27																
0.26																
0.25																
0.24																
0.23																
0.22																
0.21																
0.20																
0.19																

Education Index shows the highest dynamics: S-time-step is about 1.4 years in all HD groups

The time needed to increase one unit of the Income Index varies from 1.3 years for medium, to 2.4 years for low and 3.4 years for very high HD group

S-time-step for Health Index varies between 2.3 and 3 years

HD Group	Very high			High			Medium			Low			
HDI Rank	1	2	45	51	90	94	101	121	136	145	146	146	186
Country	Norway	Australia	Argentina	Uruguay	Turkey	Tunisia	China	Indonesia	India	Kenya	Pakistan	Bangladesh	Niger
0.95	2009												
0.94	2003												
0.93	2002	2007											
0.92	2000	2002											
0.91	1998	1999											
0.90	1997	1996											
0.89	1995	1993											
0.88	1994	1990											
0.87	1993	1986											
0.86	1991	1981											
0.85	1990												
0.84	1988												
0.83	1985												
0.82	1983												
0.81	1981		2011										
0.80			2009										
0.79			2007	2011									
0.78			2006	2009									
0.77			2005	2007									
0.76			2002	2006									
0.75			1999	2005									
0.74			1997	2000									
0.73			1995	1998									
0.72			1994	1996	2011								
0.71			1992	1994	2009	2011							
0.70			1990	1991	2007	2008							
0.69			1989	1989	2006	2006	2010						
0.68			1986	1986	2004	2005	2009						
0.67			1982	1982	2003	2004	2008						
0.66					2002	2002	2007						
0.65					2001	2001	2006						
0.64					1999	2000	2005						
0.63					1998	1999	2004						
0.62					1997	1998	2003	2010					
0.61					1995	1996	2002	2009					
0.60					1994	1995	2001	2008					
0.59					1993	1994	2000	2007					
0.58					1991	1993	1999	2006					
0.57					1990	1992	1998	2004					
0.56					1989	1991	1997	2003					
0.55					1988	1990	1996	2001	2011				
0.54					1987	1989	1995	2000	2009	2010	2010	2011	
0.53					1986	1988	1994	1998	2008				
0.52					1985	1986	1993	1997	2007				
0.51					1984	1985	1992	1995	2005				
0.50					1983	1984	1991	1993	2004	2009	2008	2009	
0.49					1982	1983	1989	1992	2003	2007	2006	2007	
0.48					1981	1982	1988	1990	2002	2006	2005	2006	
0.47						1981	1987	1988	2001	2005	2004	2005	
0.46						1980	1986	1987	1999	2003	2003	2003	
0.45							1985	1985	1998	2001	2002	2002	
0.44							1984	1983	1996	1984	2002	2001	
0.43							1983	1981	1994	1982	2001	2000	
0.42							1981		1992		2000	1998	
0.41							1980		1990		1998	1997	
0.40									1988		1995	1995	
0.39									1987		1992	1994	
0.38									1985		1989	1993	
0.37									1984		1987	1991	
0.36									1982		1985	1990	
0.35									1981		1983	1988	
0.34											1981	1986	
0.33												1984	
0.32												1982	
0.31													2011
0.30													2009
0.29													2007
0.28													2005
0.27													2004
0.26													2002
0.25													2001
0.24													1999
0.23													1996
0.22													1993
0.21													1991
0.20													1986
0.19													1981
0.18													

A quick visual overview of HDI over selected countries (trends 1980-2012)

Time matrix: time when a given indicator level was attained

In each of the 4 human development groups we selected some countries to make a provisional assessment over the range of all 187 countries.

The range of HDI values over the three decades is 0.18 - 0.95. There were substantial improvements but disparities remain very large.

China was one the best performers and it is selected as an interesting benchmark to which other countries are compared.

China is still nearly 24 years behind Argentina at the lower end of the very high human development group; in turn Argentina is about 30 years behind the leading countries like Norway and Australia.

About 15 countries of the low group have still not reached the level of China in 1980.

To indicate the magnitude of the time lag between the lowest and the highest countries we can use life expectancy: the two thirds of the low HD group are lagging benchmark Sweden between 90 and 130 years.

S-time-distance in years as a time measure of the gap

(-) time lead, (+) time lag from benchmark China for a given level of HDI

	Very high HD group			High HD group			Medium HD group			Low HD group			
HDI Rank	1	2	45	51	90	94	101	121	136	145	146	146	186
HDI Level	Norway	Australia	Argentina	Uruguay	Turkey	Tunisia	China	Indonesia	India	Kenya	Pakistan	Bangladesh	Niger
0.69			-24	-21	-5	-4	0						
0.68			-27	-23	-5	-4	0						
0.67				-26	-5	-4	0						
0.66					-5	-4	0						
0.65					-5	-5	0						
0.64	China was close to the lowest countries in the high human development group behind Turkey for 5 years, and for about 24 years behind one of the lowest countries in the very high human development group Argentina.				-6	-5	0						
0.63					-6	-6	0						
0.62					-6	-6	0	7					
0.61					-7	-6	0	7					
0.60					-7	-6	0	7					
0.59					-7	-6	0	7					
0.58					-8	-6	0	7					
0.57					-8	-6	0	6					
0.56					-8	-6	0	6					
0.55					-8	-6	0	6	15				
0.54					-8	-6	0	5	14				
0.53					-8	-6	0	5	14				
0.52					-8	-6	0	4	14				
0.51					-8	-6	0	4	14				
0.50					-8	-6	0	3	14	18	18	19	
0.49					-8	-6	0	2	14	18	17	18	
0.48					-8	-6	0	2	14	17	17	18	
0.47						-6	0	1	14	18	16	18	
0.46						-6	0	1	13	17	17	17	
0.45							0	0	13	17	17	17	
0.44							0	-1	12	16	17	17	
0.43							0	-1	11	0	18	17	
0.42							0		10	-1	18	17	
0.41							0		10		19	17	
											17	16	

S-time-distance: (-) time lead, (+) time lag from benchmark China

A quick visual overview over BRICS countries (trends 1980-2012)

Time matrix: time when a given indicator level was attained

Indicator	Human Development Index					Health Index					Education Index					Income Index				
Country	Russia	Brazil	China	S.Africa	India	Russia	Brazil	China	S.Africa	India	Russia	Brazil	China	S.Africa	India	Russia	Brazil	China	S.Africa	India
0.86											2009									
0.85											2007									
0.84							2010	2010			2005									
0.83							2008	2007			2004									
0.82							2007	2004			2003									
0.81							2004	2001			2002									
0.80							2002	1997			2002									
0.79							2000	1994			2001									
0.78	2010						1998	1990			2000									
0.77	2007					2011	1997	1987			1998									
0.76	2006					2009	1995	1985			1996									
0.75	2005					2008	1993	1982			1995									
0.74	2003					2006	1992				1993									
0.73	2002	2012				2005	1990				1992					2011				
0.72	2001	2009				2003	1988			2012	1990					2009				
0.71		2007				2000	1987			2010	1989					2006				
0.70		2005					1985			2008	1988			2009		2005				
0.69		2004	2010				1983			2006	1987			2006		2004				
0.68		2002	2009				1982			2004	1986			1999		2003	2011			
0.67		2000	2008				1980			2003	1985	2009		1998		2002	2009		2010	
0.66		1999	2007							2001	1984	2008		1998		2001	2007		2006	
0.65		1998	2006						1990	1999	1983	2006		1997			2004		2004	
0.64		1996	2005						1991	1997	1982	2004		1996			1999			
0.63		1995	2004						1992	1995	1981	2003		1995			1992	2011	2001	
0.62		1994	2003	2010					1993	1993		2003	2009	1994				2010		
0.61		1993	2002	2007					1994	1991		2002	2008	1993				2009		
0.60		1991	2001	1986					1995	1989		2001	2007	1992				2008		
0.59		1990	2000	1984					1996	1987		2000	2006	1992				2007		
0.58		1989	1999	1982					1997	1985		1999	2005	1991				2007		
0.57		1987	1998	1980					1998	1983		1998	2004	1990				2006		
0.56		1986	1997						1999	1981		1998	2003	1989				2006		
0.55		1984	1996		2011				2000			1997	2002	1987				2005		
0.54		1983	1995		2009				2001			1996	2001	1986				2004		
0.53		1981	1994		2008				2002			1996	2000	1985				2004		
0.52			1993		2007				2011			1995	1999	1984				2003		
0.51			1992		2005				2010			1994	1998	1983				2002		2011
0.50			1991		2004				2009			1994	1997	1982				2001		2010
0.49			1989		2003				2007			1993	1996	1980				2001		2009
0.48			1988		2002							1992	1995					2000		2007
0.47			1987		2001							1991	1993					1999		2006
0.46			1986		1999							1991	1992					1998		2005
0.45			1985		1998							1990	1991		2008			1997		2004
0.44			1984		1996							1989	1990		2007			1997		2003
0.43			1983		1994							1988	1989		2006			1996		2002
0.42			1981		1992							1987	1987		2005			1995		2000
0.41			1980		1990							1986	1986		2004			1994		1998
0.40					1988							1986	1984		2003			1994		1997
0.39					1987							1985	1982		2002			1993		1995
0.38					1985							1984	1981		2002			1992		1993
0.37					1984							1983			2001			1991		1991
0.36					1982							1982			1999			1990		1989
0.35					1981							1981			1997			1990		1986
0.34												1980			1995			1989		1984
0.33															1994			1988		1982
0.32															1992			1987		
0.31															1990			1986		
0.30															1989			1985		
0.29															1987			1984		
0.28															1986			1983		
0.27															1985			1982		
0.26															1984			1981		
0.25															1982					
0.24															1981					
0.23															1980					

Only for South Africa among the BRICS countries the Health Index value decreased

A quick visual overview of dynamics over BRICS countries (trends 1980-2012)

S-time-step: how many years were needed to reach the next level of indicator

Indicator	Human Development Index					Health Index					Education Index					Income Index				
Country	Russia	Brazil	China	S.Africa	India	Russia	Brazil	China	S.Africa	India	Russia	Brazil	China	S.Africa	India	Russia	Brazil	China	S.Africa	India
0.86											1.5									
0.85											2.1									
0.84							1.9	2.8			1.1									
0.83							1.9	3.0			0.9									
0.82							2.2	3.6			0.9									
0.81							2.3	3.6			0.9									
0.80							2.2	3.6			0.9									
0.79							1.6	3.6			1.0									
0.78	2.6						1.6	2.6			1.6									
0.77	1.1					2.0	1.6	2.6			1.6									
0.76	1.3					1.4	1.6	2.6			1.6									
0.75	1.3					1.2	1.6				1.6									
0.74	1.3					1.1	1.6				1.6									
0.73	1.3	2.9				2.4	1.7				1.6									
0.72		2.1				2.9	1.7			1.8	1.0					2.3				
0.71		1.8					1.7			1.8	1.0					3.3				
0.70		1.7					1.7			1.8	1.0					0.9				
0.69		1.7	1.2				1.7			1.8	1.0					1.1				
0.68		1.7	1.2				1.7			1.9	1.0					1.1				
0.67		1.3	1.0							1.9	1.0					1.1				
0.66		1.3	0.8							1.9	1.0	1.8				1.1	1.4			
0.65		1.3	0.8						-0.9	2.0	1.0	1.8					2.6		4.5	
0.64		1.3	1.0						-0.9	2.0	1.0	1.2					4.8		2.0	
0.63		1.3	1.1						-0.9	2.0	0.9	0.9					7.1		2.9	
0.62		1.3	1.1		2.5				-0.9	2.0	1.0	0.9						0.9		
0.61		1.3	1.1	21.4					-0.9	2.0	0.9	1.1	0.8					0.8		
0.60		1.3	1.1	2.0					-0.9	2.1	0.9	0.9	0.9					0.8		
0.59		1.5	1.1	2.0					-0.9	2.1	0.7	0.7	0.9					0.6		
0.58		1.5	1.1	2.0					-0.9	2.1	0.7	0.9	0.9					0.5		
0.57		1.5	1.1						-0.9	2.1	0.7	1.1	1.2					0.5		
0.56		1.5	1.1						-0.9		0.7	1.1	1.2					0.6		
0.55		1.5	1.1		1.8				-0.9		0.7	1.1	1.2					0.7		
0.54		1.5	1.1		1.4				-0.9		0.7	1.1	1.2					0.8		
0.53			1.1		1.1				-9.7		0.7	1.1	1.2					0.8		
0.52			1.1		1.1				1.2		0.7	1.1	1.2					0.8		
0.51			1.1		1.2				1.3		0.7	1.1	1.2					0.8		1.3
0.50			1.1		1.1				2.3		0.7	1.1	1.2					0.8		0.9
0.49			1.1		1.1						0.7	1.1						0.8		1.5
0.48			1.1		1.1						0.7	1.1						0.8		1.1
0.47			1.1		1.4						0.7	1.1						0.8		0.9
0.46			1.1		1.9						0.7	1.1						0.8		1.2
0.45			1.1		1.9						0.9	1.1			0.8			0.8		1.3
0.44			1.1		1.9						0.9	1.5			0.9			0.8		1.3
0.43			1.1		1.9						0.9	1.5			1.2			0.8		1.3
0.42			1.1		1.9						0.9	1.5			0.9			0.8		1.8
0.41					1.5						0.9	1.5			0.9			0.8		1.9
0.40					1.5						0.9	1.5			0.9			0.8		1.9
0.39					1.5						0.9				0.9			0.8		1.9
0.38					1.5						0.9				1.2			0.8		2.1
0.37					1.5						0.9				2.0			0.8		2.2
0.36					1.5						0.9				2.0			0.9		2.2
0.35															2.0			0.9		2.2
0.34															2.0			0.9		
0.33															2.0			0.9		
0.32															1.8			0.9		
0.31															1.2			0.9		
0.30															1.2			0.9		
0.29															1.2			0.9		
0.28															1.2			0.9		
0.27															1.2			0.9		
0.26															1.2			0.9		
0.25															1.2					
0.24															1.2					
0.23															1.2					

On the average dynamics in the Education Index was the highest: 1.2 years per one level (0.01)

Highest dynamics is in China: increase for one step (0.01) in Income Index was attained each 10 months

The average dynamics for HDI has been about 1.5 years per one level for Russia, Brasil, and India; better for China and worse for S. Africa

The group average dynamics in the Health Index is about 1.8 years per one level (0.01) with slower dynamics for China and unfortunate fall for S. Africa

Seeing with new eyes creates new knowledge and better understanding

Different measures provide very different perceptions of the order of magnitude of disparities:

1. static disparities in HDI appeared small

2. time distances in HDI were large

For a more realistic dynamic picture we need both

S-time-distance and S-time-step are expressed in time units that are intuitively understandable to policy makers, managers, media, civil society and the general public

Time matrix format also provides a first level visualisation tool

Time distance perspective adds new understanding of situation

Empirical facts e.g. show that the degree of the disparity for the HDI in time perspective is large between and within HD groups:

- very high group is leading the high group by more than 32 years
- medium group is falling behind the high group for 25 years
- low group is lagging medium group for 23 years

For methodology see

P. Sicherl, New Understanding and Insights from Time-Series Data Based on Two Generic Measures: S-time-distance and S-time-step; Working paper No. 44, Statistics Directorate, OECD Publishing, Paris, November 2011

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