

Human Capital

Definitions:

Capital = usable, productive resources, all forms of assets and capabilities that can be harnessed for human development.

Human Development = increasing human welfare, well-being and human capital (possibly increasing human freedom and creativity)

Several forms of capital introduced by A. Smith:
Land, building, machinery and human abilities.

We define: *natural* (including physical and biological), *human* (including social and cultural, of course including scientific etc – **notably**: *ideas, individuality, values, etc*), *financial* and *all other human made capitals* .

Anything becomes a resource (only) when its potential value is recognized by the human (mind). E.g. air is a resource regardless whether humans are aware of it. Pitchblende is a resource only when humans discover fission.

“Economics is not about goods and services, it is about human choice and action.” (L. von Mises)

Individuality is a product of human mental development, of social organizations, institutions and of a cultural sphere, imparting knowledge, skills and values, making available to each member the cumulative advances of the collective, and providing freedom and opportunity for unique individual characteristics to develop.

Individual in History (S. Korolev vs N.S. Khrushchev
“Soviet people made Sputnik”)

Through individual-society-culture interaction human capital can be augmented, destroyed, misused and wasted.

The constant interaction, exchange, mutual dependence and reinforcement between the individual and the collective give human capital the unique capacity for self-development and self-augmenting. This bootstrapping accounts for the evolutionary character of civilization, resulting particularly from organization, education and culture. It gives rise to *human capital its unlimited capacity for development, the very basis for the progressive advance of civilization.*

Human capital evolved slowly, but in recent centuries the pace of development has accelerated exponentially.

Society now exhibits the apparent capacity to leapfrog in a single generation from riding llamas to flying in airplanes, from bullock carts to cell phones, from primitive agriculture to advanced ICT-based services.

The development of human capital over time is a function of the human capital (which includes all forms of social capital, denoted here by Ψ), natural capital (e.g., ecosystem, air, water, denoted by Φ_N) and human-made capital (e.g., infrastructure, building, money - denoted by Φ_{hm}) and their evolution.

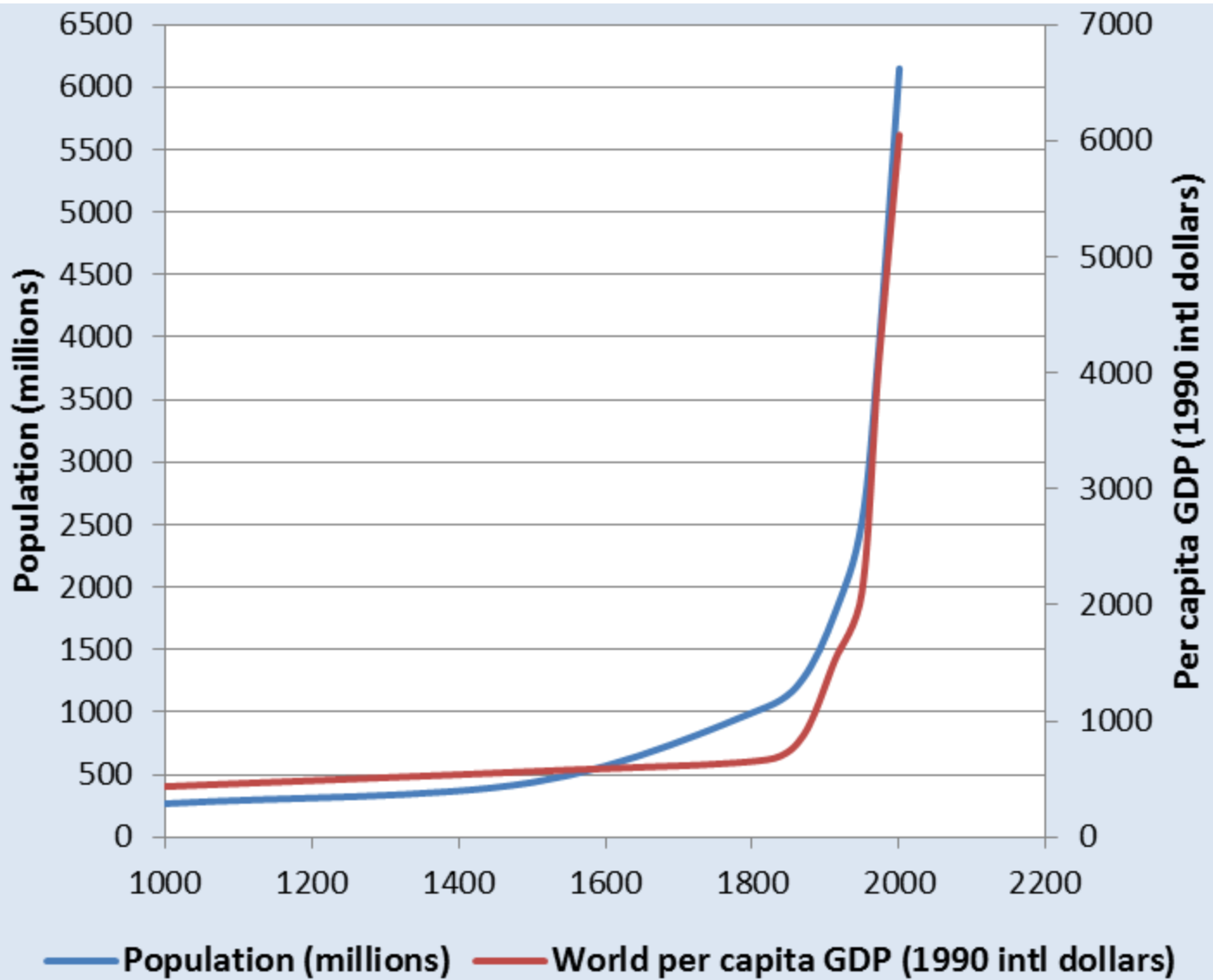
Improving health care, education and employment augments human capital proportionally to the human capital ($\lambda\Psi$). Improving socio-economic and political conditions, stimulating creativity augment human capital even more than proportionally ($\mu\Psi^a$).

Socio-economic and political conditions can have beneficial and destructive effects: λ and μ can be negative. In addition there are sudden changes, black swans, labeled P for those having positive and D for those having destructive effects. All scientific advances fall in category P, as well as social-political events such as the end of Cold War and nuclear disarmament. War, large income inequalities and violation of human rights destroy human capital.

$$\begin{aligned} d\Psi/dt = & \lambda\Psi + \mu\Psi^a + P - D + \\ & + \alpha(d\Phi_N/dt)\Psi + \beta(d\Phi_{hm}/dt)\Psi + \gamma(\Psi, \Phi_N, \Phi_{hm}) \end{aligned}$$

The term $\alpha(d\Phi_N/dt)\Psi$ demonstrates that human capital decreases if natural capital decreases. The term $\beta(d\Phi_{hm}/dt)\Psi$ shows that human capital decreases if human-made capital decreases, e.g., as a result of war. The complex interdependence of all capitals is the last term $\gamma(\Psi, \Phi_N, \Phi_{hm})$. λ , μ , P , D , α , β and γ are time dependent.

The self-augmenting character of human capital is shown by the growth of GDP/c in recent centuries. In spite of a 22-fold rise in world population over the last 1000 years, GDP/c has grown 13-fold. Since the advent of the Industrial Revolution, both population and GDP/c have increased six-fold, signifying a 36-fold rise in productive capacity in two centuries, challenging the very notion of scarcity and economic limits.



Inequality:

Large inequalities destroy human capital (e.g. see Fig 2.
- R.G. Wilkinson and K. Pickett, Spirit Level, 2009).

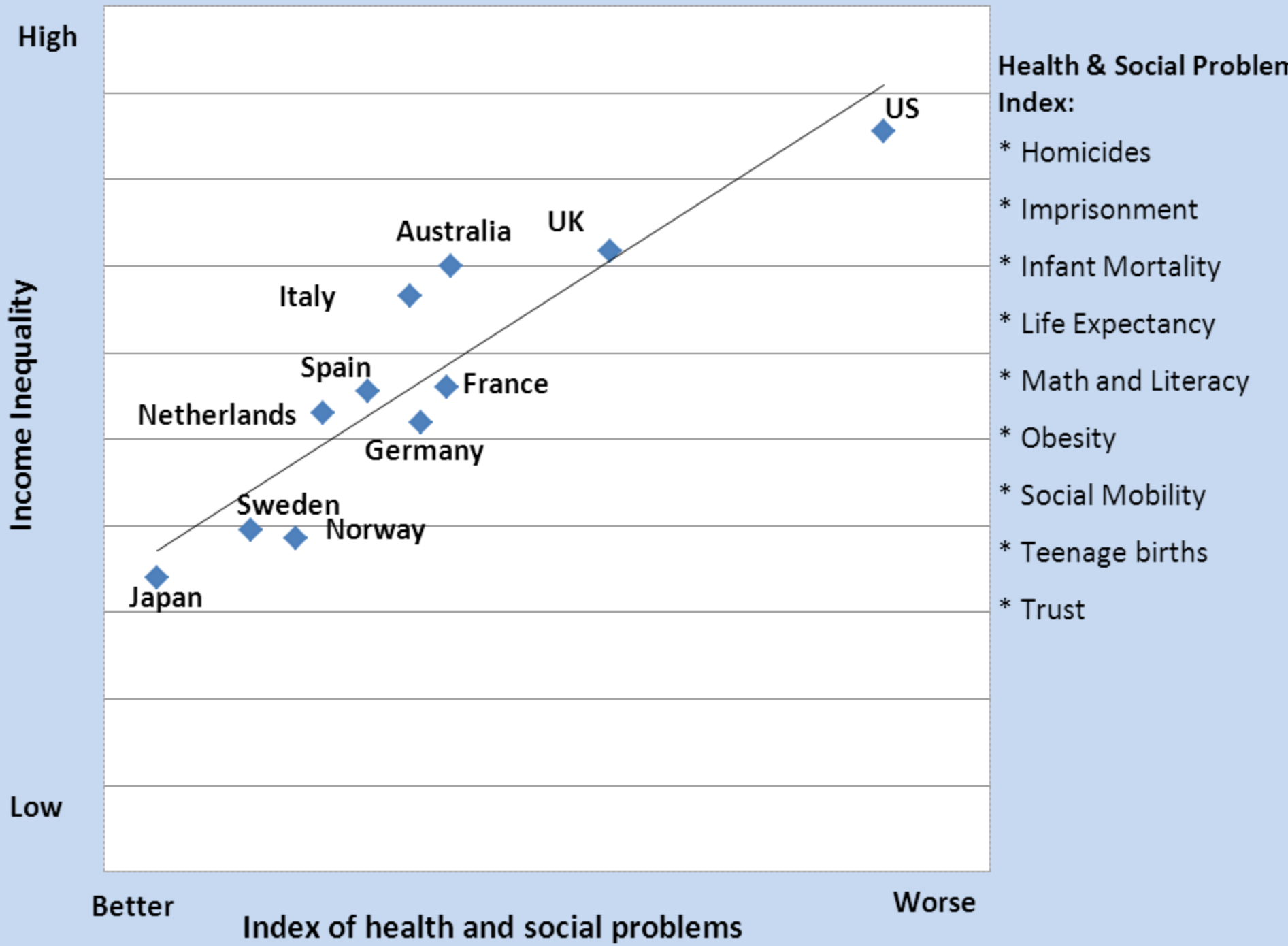
Taking into account inequality Human development index decreases:

27% for Arab States, 33% for Sub-Saharan Africa and 30% for South Asia.

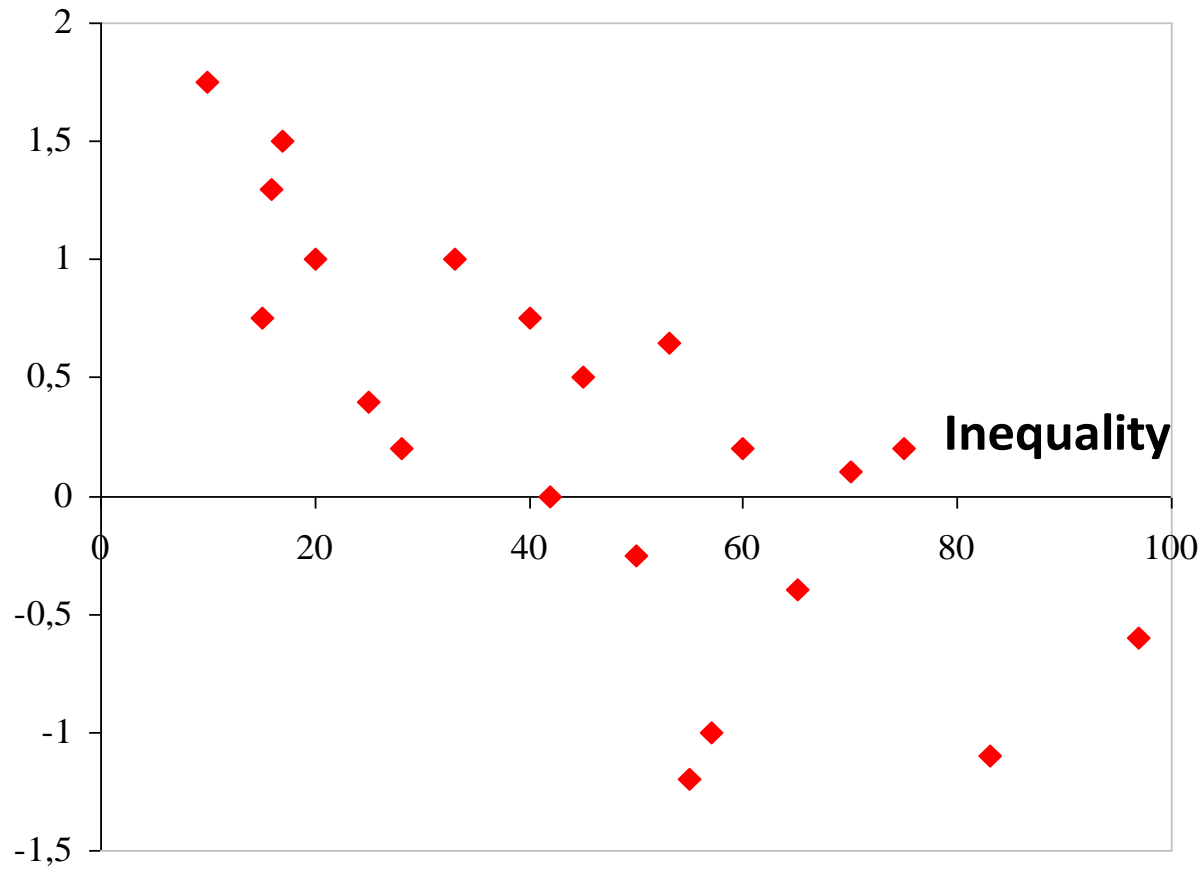
Interestingly loss is largest in:

- education (57%, 32% and 50%, respectively) and
- health (24%, 45%, 34%, respectively)

There is an ‘efficient inequality range‘ which is most conducive to economic growth (Cornia and Court, Inequality, 2001) However, the level of inequality that is optimal for economic growth may not be optimal for social stability and development of human capital. There is abundant evidence to support the view that lower levels of income inequality are essential for achieving optimal and sustainable development of human capital.



Values (secular/rational +) vs. Inequality



Social groups and interactions \leftrightarrow evolution. In 1973 John M. Smith applied game theory to the evolution: evolutionary stable strategy. Animals not only compete but often share a resource if that is beneficiary. **“The best place to store food is in another person belly.” (Eskimos’saying)**

Winning strategy: **tit-for-tat**: cooperate and never be the first to defect, retaliate only after your partner has defected, forgive and cooperate after retaliating just once. (R.Axelrod)

♥ **Golden moral rule**

♥ **Altruism is an example of a non-zero-sum-game, i.e. a win-win game.**

☀️ “People are the real wealth of nations. The basic aim of development is to enlarge human freedom and choices so that people live full and creative lives. This must benefit everybody equitably.”

The State of Human Development, Human development indicators, 2004, p.127, UNDP

☀️ We add: people - healthy, educated, active and happy, living in a society of social justice and social cohesion in a healthy environment assuring sustainable development.

♥️ Achievable: “Enough for human needs, but not for human greed.” (M. Gandhi)

Contemporary socio-political system is not adequately understood and we even lack appropriate measures (e.g. GDP is not adequate!).

We need a new paradigm for human development.

Measure: from income to people-centered:

☀ *Human Development Index* (A. Sen, Mahbub ul Haq, Human Development Report 2013: The Rise of the South – Kh. Malik)

☀ J.E. Stiglitz, A. Sen, J.-P. Fitoussi: *Report by the Commission on the Measurement of Economic Performance and Social Progress*, 2009 – also suggest *subjective indicators of well-being*.

Country HDI_r (GNI-HDI)_r IHDI_{los} GINI LS_(0-10h)

r-ranking, IHDI_{los} decrease due to inequality

Germany	5	10	6.9%	28.3	6.7
Austria	18	- 5	6.6	29.2	7.5
Slovenia	21	12	5.8	31.2	6.0
Croatia	47	4	15.1	33.7	5.6
RusFed	55	0		40.1	5.4
MontN	52	24	8.0	45.3	5.5
Serbia	64	16	8.0	27.8	4.5

☀ G. Jacobs and I. Šlaus: *Indicators of Economic Progress*, Cadmus 2010

☀ Sir Partha Dasgupta et al: *Inclusive Wealth Report, 2012*

😊 human (social) +

◇ natural +

♣ manufactured

Measuring Human Capital

While financial capital, land, even labor and natural capital are measured or are attempted to be expressed through money, human and social capitals seem to be above and beyond expressing in money. One of the major tasks ahead is to measure human and social capitals, qualitatively and possibly quantitatively.

☀ **Real Wealth of Nations** (2012): human, natural and human-made capital (www.ihdp.unu.edu/article/iwr)

USA (2008)	=	\$ 117.8 trillion	(HC = 75%)
UK	=	\$ 13.4	(HC = 88%)
Saudi Arabia	=	\$ 4.9	(HC = 35%)
Brazil	=	\$ 7.4	(HC = 62%)
Russia	=	\$ 10.3	(HC = 21%)

Health + Education + Freedom + Cooperation + Activity

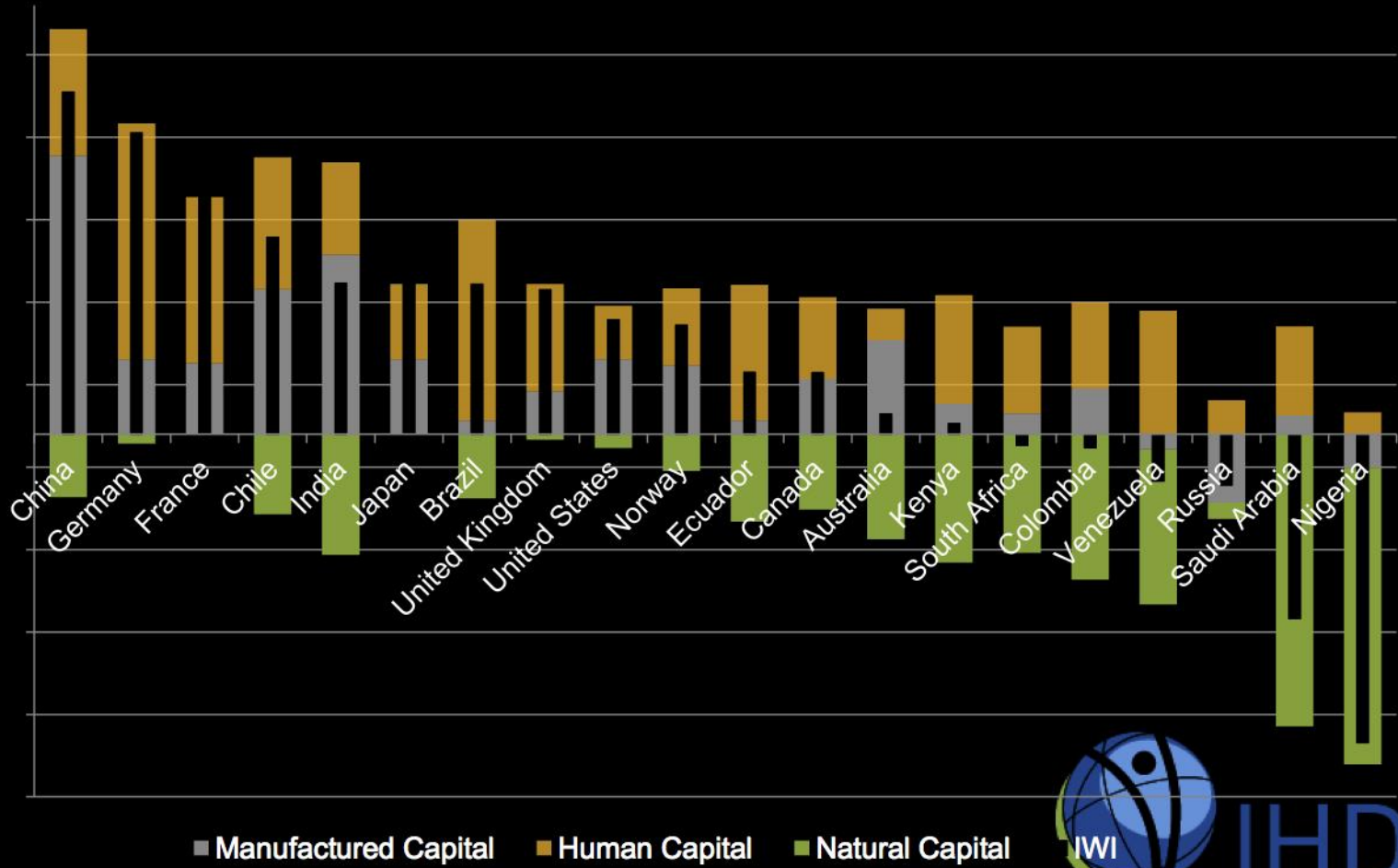
Estimate World Natural Capital (1997, Nature)

= 33 T\$ = 2 x WGDP

World GDP : World Wealth = 60 : 600 T€



Average annual growth in IWI per capita



■ Manufactured Capital ■ Human Capital ■ Natural Capital



IHDP

Opinion Poll on Economic Crisis

♣ April 2013 (Ipsos – Publicis): UK, France, Germany,
Poland, Italy, Spain

75% **worse** (40% Spain)

2% crisis will end in 2014

♣ Effect of the reforms:

Spain 76% negative

Poland 76% positive

Italy 71% negative

♣ Government 71% negative

29% positive

♣ Being member of EU 52% positive

Market

- ☀ More than democracy since no tyranny of the majority (or minority), but
- ♣ Irrationality of the crowd,
- ♣ real vs. virtual, could be real << virtual

Markets failures:

- ♣ ecological footprint and climate change (destroying natural capital)
- ♣ huge unemployment (destroying human and social capital)

- ♣ speculative bubbles (significant gap between intrinsic value and exchange price. Real estate bubble → crisis)
- ♣ self-fulfilling prophecies (slow econ activity → pessimism)
- ♣ credit default swap: financial instrument classed as derivative negotiated directly
- ♣ sovereign default: Argentina 2001, Greece now?
- ♣ public debt: all loans by state, local comm and social security organizations $\leq 60\%$ GDP (Stability and Growth Plan).
- ♣ contagion - mistrust (destroying human and social capital)

♠ Energy: GDP/c correlates with energy consumption below 3 toe/c y. If all would reach that consumption then World Ener. Cons. 2.6 times larger than today. If 9 G people then 3 times. **Need more energy!**

Type I civilization: using all Earth resources, Type II uses all Solar, Type III uses all galactic (Kardashev)

We are not even Type I civilization.

Imperative: **capability to colonize beyond Earth**

♠ Ecological footprint: 2008: 1.27. We consumed and polluted 27% more than the capacity of our Earth. Now 50% !!

♠ Climate Change

♠ Demographic transition:

Currently 7 billions → 2100: 9-10 billion

→ 2300: 2-3 billions

LE increases 3 months each year

Population of China starts decreasing in 2029

Median age in 2050 in Japan 56, in Germany 52

♠ Employment: Europe 50-70% - Aim 75%

♠ Retirement at 65 unsustainable - svecchiamento

♠ Migration

Moral Crisis

♥ "Every gun made, every warship launched, every rocket signifies in the final sense a theft from the hungry. The world in arms is not only spending money. It is spending the sweat of its laborers, the genius of its scientists."(D. D. Eisenhower, 8/16/ 1953)

“To ensure the development of humankind, it is necessary to banish war, any military and non-military violence from our culture. Violence and its ideology are remnants of the past., social pathologies incompatible with the new era.” (A. Peccei, 1984)