

Nature's economic and financial order and the natural solution of poverty

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Abstract

The paper substantiates economic order within the natural equal real world. Using philosophy of Hegel, observations, and hedonic methods, it identifies natural phenomena where creatures meet one another as markets with supply of and demand for goods and services, and *energy* as equivalent of human money. It explains the dual structure of these markets including transfer of mutual payments, and how any creature solves the paradox of being in one and the same subject producer, product (its own living body), and final user of the latter. Humans are subjected to this natural order as well as to human ones, both interact but the natural one is superior, hence humans can't escape its reactions. The paper reflects wealth and poverty in Hegel's consistent entire picture of human production, and it derives the sustainable reaction of the natural order on human poverty which is called its natural solution: Future generations of the present poor by migration if necessary will replace future generations of the present wealthy in their own societies. Why? Because of the present poor realize the top aim of the economic order of the natural world which is *conservation of life*, and the present wealthy don't realize it, rather and for sake of self-realization in present they follow aims of *material production and related services* of human societies (measured in money units within the System of National Account) which are peripheral or subordinate goods within the natural world where counts *biological production and related services*, only. Due to the natural law of conservation of energy any creature including humans can spend its energy only one times, the more it spends for material production the less it can spend for biological reproduction. Statistical figures of development of net reproduction rate in human societies, and those of migrations from developing to developed countries confirm this solution.

Keywords: Poverty, Philosophy of Economics, Natural Economics, Energy

Preliminary remarks

In the forerun of this session, in September 2009 I wrote to the chairpersons of Scientific Program Committee (Murray Cameron, Silvia Regina Costa Lopes): "I would like to initiate an invited paper meeting entitled either *Sustainable indicators to measure welfare and poverty* or *Is there economic order within the natural system, and if yes how can we use it to measure and manage poverty* for 58th ISI Session 2011 in Dublin; I myself prefer the second title". And I substantiated (Begin of citation): "Firstly I refer to session IPM16 "Comparing Poverty and Prices across National Boundaries - the ICP Programme and PPPs" with organizer and chair Fred Vogel from Thursday, 20 August (Remark: of 57th Session of ISI in Durban 2009). Although the term "poverty" was included in the title of this session, with surprise I observed, and discussant Michel Mouyelo-Katoula of World Bank mentioned as well (thus confirmed my observation) that the word "poverty" didn't occur explicitly in all presentations although these considered and compared price indices. Unsaid it was obvious that poverty phenomenon is measured in terms of consumer price indices, only. Such a narrow angle of view encouraged me to the comment: Is it really correct to measure poverty in terms of prices? I put this under question, and why? The answer I give you with a different question which is: Can you tell me why the net reproduction rate in (poor) African countries is so high? Taking this (high) reproduction rate of human biomass into consideration, I conclude these Africans can't be as poor as it looks when we focus figures of consumer price indices, only. For me the essential link between biological production (of human biomass) and economic production (of goods and services within human economics) was missing and fully out of consideration. Why the natural/biological production of humans is out of the economic

scope and only viewed as a social phenomenon? I conclude a need for discussion and clarifying interdependencies between both production processes of human world and natural world. The artificial wall and separation between natural and economic sciences prevented and still prevents this discussion. Secondly I refer to session IPM18 "Sustainable Development Indicators - New Challenges" from Saturday, 22 August (Remark: of the same ISI session in Durban) with organizers Rosie Fyfe, Rachael Milicich, and chair Walter Radermacher (Eurostat). Although I couldn't participate in the full session, the dissatisfaction (of representatives of developing countries) with the list of statistical indicators mainly economic ones to measure sustainable development was obvious and came up during floor discussion. This dissatisfaction (especially pronounced by Hilary Southhall, consultant in statistics, health economics, South Africa) encouraged me to the comment that African (developing) countries are producing in a different economy, the natural economy with creatures including humans as products, and this natural production doesn't reflect adequately in the list of indicators measuring sustainable development (of developed countries). Referring to UN-World Report 2000 (middle variant) of period 1995/2000, I cited net reproduction rates of selected developed and developing countries: South Africa 1,3; Nigeria 2,16; Egypt 1,52; Germany 0,64; Italy 0,58; Russian Federation 0,56; USA 0,96; China 0,80; India 1,38, and I concluded the reproduction rate of human society is an essential economic indicator within the natural system, although it is viewed as a social indicator in human society, only. The issue to consider the biological production process of species and populations (including humans) also as an economic production process is essential I think. After seven years of research about Nature's economic and financial order (detected by observation), and its impact on human society and politics (and firstly presented in the contribution "What is the money equivalent in the natural system? Results of a hedonic approach" on ISI-conference in Berlin 2003), the time is ripe to break down the artificial wall and separation between natural and economic sciences, I think. Hence there is a need for discussion of results and consequences, and the ISI-session in Dublin is a splendid platform for this discussion. In order to provide answers to challenges of human society like poverty (which is focused here) there should be taken any chance to promote approaches to solutions also by statisticians" (End of citation). Now in August 2011 this session is reality, and my part is to substantiate and confirm the existence of economic and financial order within the natural system, and to explain the natural solution of poverty within this context.

Results of my exploration of Nature's economic and financial order (or system) since 2002 I wrote down in the book "Introduction to Nature's Economic and Financial System, Features, Impact on Human Society and Politics" (Maier, 2006a) including three parts: A first part in which I confirm the hypothesis of economic and financial order within the real (and natural) world with energy as means of payment instead of human money; a second part in which I describe leading indicators and aims of Nature's System of Populations Account SPA (as equivalent to human System of National Account SNA of United Nations), and in which I compare the power of human and natural economic order and analyze interactions between both; and a third and political part in which I explain two scenarios how mankind may respond to global challenges of present century: By adapting its behavior to the rules of the (superior) natural system, or by using its superior flexibility (compared with different species) and hold up reactions of the natural system as long as possible. This book is the basis of this presentation, but its results and conclusions are focused on poverty and strategies to its solution. Moreover, since 2003 I took the opportunity to present and discuss intermediate results on conferences of ISI, its section IAOS and others focusing special items like financial crisis (Durban 2009), economic role of social indicators (Shanghai 2008), new indicators to measure wealth and poverty (Lisbon 2007 and Wroclaw 2006), economic explanation of natural and social phenomena (Beijing 2005 and Nairobi 2004), and presenting energy as equivalent of money within the natural system (Berlin 2003), see Maier (2003-2009).

Remarks on approach and results

The approach within my exploration of Nature's economic and financial order is hybrid, "bottom up" (starting with observations – the strongest tool of statistics discipline – and deriving hypotheses) as well as "top down" (posting axioms and deriving conclusions), and it's interdisciplinary. Scientific instruments are observations (of natural phenomena), intuition (by asking questions to observations and giving answers), and analytical tools (of philosophy, economics and natural sciences, in order to test – reject or confirm – observations and given answers). Its mental roots go back to British empiricism¹, French physiocratists² and to the German philosophy³ of 17th to 19th century at least⁴. This order is hidden because its equivalent of money is invisible but it is existent and observable. Perhaps only the principle of Future's Research of 20th century⁵ to think about impossible seeming matters - and the existence of an economic and financial order within the real world up to now indeed seems to be impossible in the heads of most people including scientists, statisticians, and politicians - opened the eyes to apply Hegel's philosophical concept, and to look at natural phenomena also through glasses of the economist. What is new? New is, firstly, that we center the natural world (real world) with all species and creatures and look at human species and societies as an important species, surely, but nevertheless a subordinate one, and not vice versa as done up to now in economic theories. This approach may be compared with Galileo Galilei's (1564-1642) approach to center the sun with the earth going around it, and not vice versa as done before. New is, secondly, that we consider the creation of life of creatures and species not only as an biological production process but also as an economic one executed by these creatures themselves, and not by human beings. To clarify the latter: The apples of an apple tree, for example, are not produced by a farmer within human agricultural industry rather they are produced by the apple tree itself.

I learnt, briefly: Within the economic and financial order of the real world energy plays the role of money and serves as means of payment for goods and services. Different from human money energy is invisible but measurable like human money. All goods and services have a price, and not only scarce goods and services like in human economics. Payments of all creatures are made and accepted in energy units. Like human money occurs in different currencies energy occurs in different types. Like human money is transferable from one person to another, energy is transferable from one creature to another. The transfer of payments is enabled by the dual structure of the natural markets with double roles of supply and demand of the concerned creatures. Like human money is convertible from one currency to another, energy is convertible from one type to another. Like a fee is charged when banks change money from one currency to another, with converting energy from one type to another there is charged a fee to be paid in thermal energy. Creatures include a bank because they are able to convert energy from one type to another. The sun plays the role of the central bank, autonomously and independently it issues energy to creatures on earth. This is a subsidy and impulse for creation of life but not a sufficient one; any creature must gain additional energy

¹ Main representative is the British philosopher John Locke (1632-1704) the mental root is that knowledge is based on observations. Note: The interpretation of observations is subject of statistics discipline.

² Main representative is Francois Quesnay (1694-1774) the mental root is his comparison of the circulation of blood within a human being with the circulation of goods and services within the economy.

³ It is thought of Wilhelm Hegel (1770-1831), the mental root is his philosophical concept to comprehend a subject by describing it from different views and putting these descriptions like pieces of a puzzle together to a consistent common picture. And it is thought of Karl Marx' concept of thinking in categories of thesis, antithesis, and synthesis.

⁴ The author supposes as well roots in Chinese philosophy of Taoism (because of the existing natural order is viewed as best and incisions should be avoided, and because of the Yin-Yang principle which is related to Hegel's philosophical concept) and in Old-Egyptian religion (because of the faith in a god of natural order within this religion).

⁵ Main representative and co-founder of Future's Research discipline is Ossip Flechtheim (1909-1998).

for life, day by day. Moreover: The area of the natural state can be assumed to be the planet system of the sun. Its laws are the laws of natural sciences. Its population is the entirety of creatures. Its social top aim is conservation of life. The natural state finances its activities by energy from sun and by taxes from creatures. Taxes are energy transfers from the creatures to the environment; reversely subsidies are energy transfers from the environment to the creatures. Creatures act and react with incomplete information. They represent enterprises and customers in one subject: They produce, consume, and finance their final product “life” equal “the own living biomass able to provide services” by themselves. And populations and species represent industries which are specialized to produce and reproduce individuals of the own species. Leading indicators of the System of Populations Account SPA for all species (as I call it according to the System of National Account SNA of United Nations for humans) because of the products are living beings and related services in our human eyes are social and biometric indicators, and they aren’t economic ones (according to material production and related services of human SNA). The most decisive one describing economic efficiency is growth of net reproduction rate, and it equals growth of Gross National or Domestic Product GNP or GDP in human SNA. The economic order or system of the natural world is driven by two forces: By the demand for life of creatures, and by the supply of energy from sunlight; and creation of life on earth is restricted to its natural resources. Gradual deconstruction and pollution of environment (in our eyes) are unavoidable traces of former, present, and future life of the entirety of creatures on earth. Finally, the economic power of the natural system is superior and restricts human freedoms; it reacts sustainable on a violation of its rules and laws. These reactions are unmeant global challenges of mankind including poverty; and it is arrogantly and fatally to neglect the existence and power of this natural system.

In order to cross the impression the above listed results represent wishful thinking or science fiction, exemplarily I give evidence of two selected characteristics which illuminate as well the power of this approach and of Hegel’s philosophy.

Evidence of energy as means of payment and of transfer of payments in real world

Imagine the natural phenomenon “deer are grazing on a meadow”:

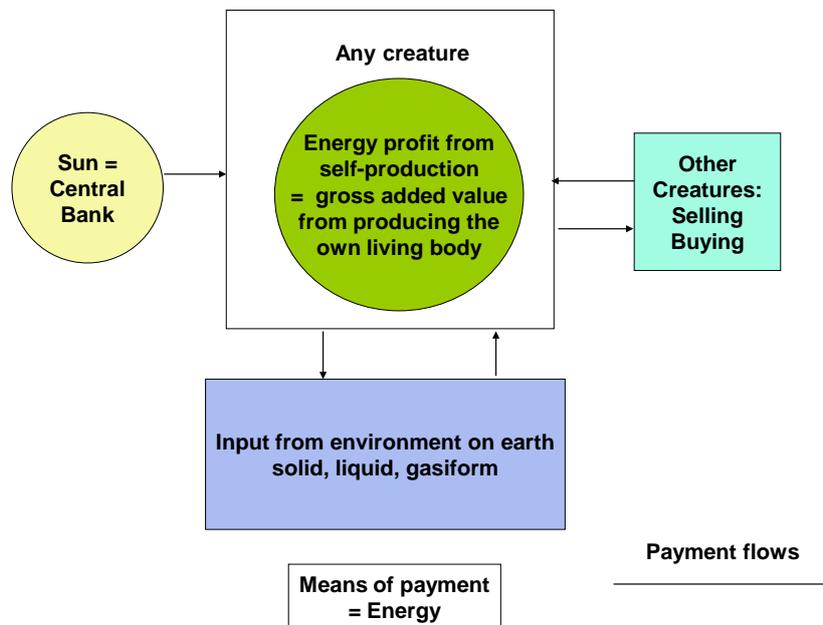


Through the glasses of the economist this phenomenon looks like a food market. Demand is represented by the deer population, supply is represented by the grass population, market place is the ground of the meadow, and the good is the food grass which is eaten by the deer. But is it really a market? The crucial questions are: What does a deer pay for grazing? And

how is its payment transferred to the grass population? We have to find lucid answers. As we realize no means of payment, to get answers we start empirically. We observe: A deer moves with grazing. We ask: What does a deer need for moving? We shift this question to natural sciences, Isaac Newton’s (1643-1727) answer is: A deer needs force. We ask further: Where does force come from? Isaac Newton’s answer is: Force is a derivative of the potential energy. We learn: A deer loses energy gains force and from it move. We identify “losing” with “paying” and conclude the hypothesis: The deer pay with energy, energy is a means of payment within the real world. So far we looked at this phenomenon with view from the deer population. Now we apply Hegel’s concept and look at this phenomenon with view from the grass population. We learn: This phenomenon has a second or dual interpretation which is “seeds of grass are waiting for transport to settle at a distant location”. And we learn: This dual interpretation looks like a transport market with changed roles of demand and supply. Demand is represented by the grass population, supply is represented by the deer population, market place is again the ground of the meadow, and the service which is sold is transport. According Hegel’s philosophy we put the two pieces of this puzzle like upper and down side of a coin together to a consistent picture, and we conclude: Both populations have to pay, the deer population on the food market, and the grass population on the transport market. And through observation we realize the transfer of both payments: By eating the deer get chemical energy from the grass where the seeds are included like in a parcel. And by being eaten the robust seeds get kinetic energy from the deer like passengers in a bus. Thus the eating procedure represents both transfers of payments in energy units made in different currencies, and the crucial questions from above have lucid answers!

Evidence of solution of financial paradox within biological self-production in real world

Observably any creature is producer and final user of its own body, and even the product (its body) itself in one and the same subject. This paradox of biological production processes is not known in economics. Observably any living creature is able to solve this paradox. The graph below illuminates its unconscious solution with energy as means of payment:



Any creature gets and uses energy from sunlight; it gets and pays energy from selling and buying goods to and from other creatures on dual markets; and it gets and pays energy by taking primary input in solid, liquid and gasiform from the environment. But these three sources are not enough to cover the high cost of biological self-production. The decisive fourth source is the energy profit from its self-production, in economics known as surplus

value from production (with view from theory of enterprises) or known as surplus value from labor (with view from Marx' theory), and in System of National Account SNA known as gross added value from production. This surplus energy arises in the body of any creature during transforming its species-specific inputs to build up and restore its own living biomass. Without this surplus energy a creature could not finance its own life and body hence would not exist physically. In respect to Hegel's consistent picture of biological and human material production and related services, this surplus energy gained by biological self-production is no violation of the natural law of conservation of energy. This conclusion is reflected as well in the macroeconomic context of a closed economy with deer and grass population mapped by an input/output-table of a static and open Leontief model (Maier, 2006a, p.47):

Design of input-output table of natural world at works prices Values in energy units Basis: one period/year

Cost benefit pattern Balanced status Rows 1,2,3: Returns, Columns 1,2,3: Costs Figures for illumination			Intermediate use / inputs			Final use / final demand			Total production output
			Food production industry grass population	Transport service industry deer population	Total intermediate use / inputs	Sunlight	Surplus value by labor profits living	Total final use	
			1	2	3	4	5	6	
Output from industry	1	Food production industry grass population	0	100	100	40	70	110	210
	2	Transport service industry deer population	100	0	100	30	100	130	230
	3	Total	100	100	200	70	170	240	440
Primary input from nature / state	4	Gas/air	15	20	35				
	5	Liquid/water	20	15	35				
	6	Solid/earth	10	5	15				
	7	Sunlight	0	0	0				
	8	Total	45	40	85				
Gross added value distribution	9	Taxes/heat emission	5	15	20				
	10	Labor income/living	33	44	77				
	11	Entrepreneur profits/living	2	6	8				
	12	Depreciation/reproduction	25	25	50				
	13	Total	65	90	155				
All industries	3+8+13	Total production input	210	230	440				

Briefly: Column 1 represents total cost of grass population for production input within one period/year of 210 energy units (row 3+8+13) including posts for intermediate input (here: buying transport service from deer population), posts for primary input from environment/nature (for gasiform, liquid, solid materials and for sunlight), and for distribution of gross added value (taxes/heat emission, labor income/living, entrepreneur profits/living, and depreciation/reproduction). Column 2 represents total cost of deer population for production input within one period/year of 230 energy units (row 3+8+13) including posts for intermediate input (here: buying food from grass population) etc. For sake of biological existence grass and deer population need returns from production output of equal amount 210 and 230 energy units in the same period represented in rows 1 and 2 (column 3+6). The income sources are: From selling food grass and transport service for seeds of grass (twice 100 energy units in column 1 and 2), from sun via sunlight (40 and 30 energy units in column 4), and from the surplus value gained by self-production (70 and 100 energy units). Those species/populations which can't balance their cost by equivalent returns vanish from market and become extinct. Notes: This table can be extended to all species/populations including human; mutual payments on dual markets must be equal (here: twice 100 in field of row 1, column 2, and in field of row 2, column 1), otherwise these markets vanish gradually; although real data is missing and isn't available, the conclusions still hold.

Appendix to leading indicators and net reproduction rates

Appendix: Leading Indicators to Measure Economic Efficiency, Wealth and Poverty in Human and Nature's Economy								
Basis of Measure	Human Species	Equivalents with Nature's Species/Populations	Statistical Data	Human Species	Statistical Data	Illuminated by	Type	
	System of National Account SNA	System of Populations Account SPA		Retranslation from Natural System				
	1	2	3	4	5	6	7	
Domestic/ Regional Approach	1	Gross Domestic Product GDP in physical units (goods, services)	Gross Regional Biomass GRB in mass units (created, transported)	not available	Gross Domestic Human Biomass in mass units	available	Number of Domestic Population	social
	2	Value of Gross Domestic Product GDP in money units	Value of Gross Regional Biomass GRB in energy units	not available	Value of Gross Domestic Human Biomass in energy units	?	Value of Domestic Population in energy units	biometric
	3	Gross Domestic Product GDP per capita in physical units	Gross Regional Biomass GRB per area unit in mass units	not available	Gross Domestic Human Biomass per area unit in mass units	available	Density of Domestic Population in people per area unit	social
	4	Value of Gross Domestic Product GDP per capita in money units	Value of Gross Regional Biomass GRB per area unit in energy units	not available	Value of Gross Domestic Human Biomass per area unit in energy units	?	Energy Density of Domestic Population in energy units per area unit	biometric
National/ Population Approach	5	Gross National Product GNP in physical units	Gross Species Biomass GSP in mass units	not available	Gross National Human Biomass in mass units	available	Number of National Population	social
	6	Value of Gross National Product GNP in money units	Value of Gross Species Biomass GSP in energy units	not available	Value of Gross National Human Biomass in energy units	?	Energy of National Population in energy units	biometric
	7	Gross National Product GNP per capita in physical units	Gross Species Biomass GSP per individual in mass units	not available	Gross National Human Biomass per capita in mass units	available	Mass Density of National Population in mass units per capita	biometric
	8	Value of Gross National Product GNP per capita in money units	Value of Gross Species Biomass GSP per individual in energy units	not available	Value of Gross National Human Biomass per capita in energy units	?	Energy Density of National Population in energy units per capita	biometric

Appendix: Net reproduction rate in selected countries ^{*)}

Country/Year	1950/55D	1965/70D	1980/85D	1995/2000D	2010/15D	Country/Year	1950/55D	1965/70D	1980/85D	1995/2000D	2010/15D
Europe						Tunisia	2,21	2,50	2,05	1,05	0,99
Germany	0,85	1,02	0,70	0,64	0,63	Uganda	2,09	2,40	2,45	2,33	2,50
Belgium	1,06	1,10	0,76	0,75	0,71	America					
Denmark	1,19	1,04	0,69	0,83	0,78	Argentina	1,37	1,37	1,47	1,24	1,05
Estonia	0,93	0,95	0,98	0,59	0,61	Brazil	2,27	2,16	1,60	1,05	0,98
Finland	1,37	0,98	0,81	0,83	0,74	Costa Rica	2,68	2,53	1,65	1,35	1,16
France	1,26	1,23	0,90	0,83	0,89	Jamaica	1,72	2,50	1,68	1,18	1,00
Greece	1,02	1,07	0,91	0,62	0,60	Canada	1,74	1,20	0,78	0,77	0,79
Italy	1,09	1,15	0,74	0,58	0,59	Colombia	2,44	2,56	1,65	1,30	1,12
Latvia	0,90	0,85	0,94	0,53	0,56	Mexico	2,49	2,81	1,92	1,28	1,04
Lithuania	1,20	1,07	0,97	0,66	0,57	Panama	2,22	2,43	1,62	1,23	1,03
The Netherlands	1,41	1,30	0,73	0,74	0,73	Paraguay	2,76	2,75	2,36	1,91	1,51
Poland	1,52	1,05	1,11	0,70	0,63	United States	1,60	1,20	0,87	0,98	0,92
Portugal	1,24	1,27	0,93	0,70	0,69	Asia					
Romania	1,27	1,35	1,06	0,62	0,65	Afghanistan	1,76	2,01	2,09	2,07	2,03
Russian Federation	1,25	0,95	0,96	0,58	0,56	Bangladesh	1,81	2,16	1,89	1,54	1,28
Sweden	1,04	0,99	0,79	0,73	0,65	China ¹⁾	1,85	2,44	1,12	0,80	0,88
Spain	1,17	1,34	0,84	0,55	0,54	India	1,63	1,87	1,68	1,38	1,01
Turkey	2,29	2,12	1,74	1,23	0,99	Indonesia	1,56	1,88	1,65	1,16	0,99
United Kingdom	1,02	1,20	0,87	0,82	0,77	Japan	1,19	0,97	0,85	0,68	0,69
Africa						Dem.People's Rep.Korea	1,22	1,91	1,31	0,92	0,97
Egypt	2,07	2,28	1,95	1,52	0,99	Republic of Korea	1,79	1,83	1,10	0,70	0,79
Algeria	2,30	2,73	2,69	1,45	0,98	Pakistan	1,80	2,05	2,27	2,17	1,77
Cameroon	1,57	1,95	2,35	1,87	1,54	Philippines	2,51	2,57	2,11	1,67	1,10
Kenya	2,32	2,87	2,97	1,77	1,30	Thailand	2,41	2,48	1,37	0,99	0,89
Nigeria	1,90	2,12	2,36	2,16	1,76	Australia ²⁾	1,48	1,35	0,93	0,85	0,86
South Africa	2,10	2,32	1,94	1,30	0,84	New Zealand	1,63	1,51	0,93	0,94	0,90

*) Data of United Nations, medial variant; Revision 2000. The net reproduction rate informs to which extent a generation of women is replaced by daughters born by these women under certain birth and mortality conditions. A rate of 0,64 for example means that there were born 36% less daughters to replace the full female population.

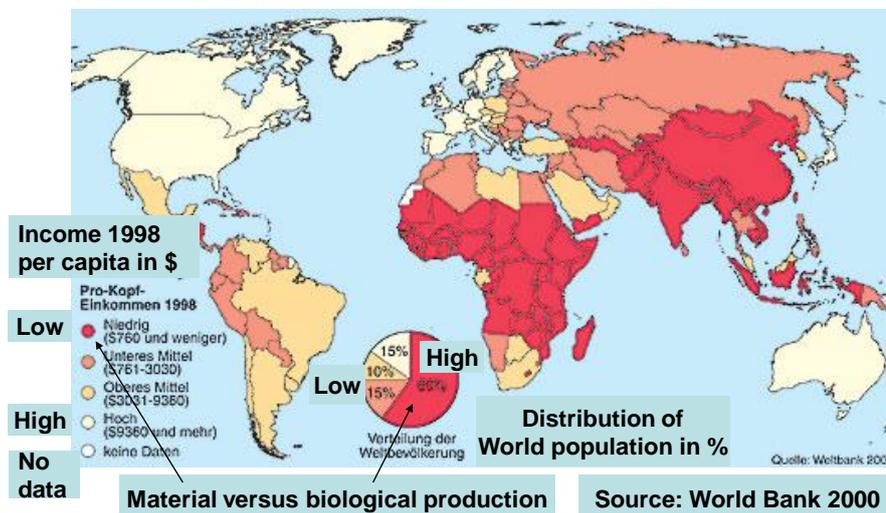
1) Without data of Hong Kong, Macao, and Taiwan. 2) Including Christmas islands, Cocos islands, Norfolk islands.

Source: World Population Prospects, UN, New York. Taken from: Statistisches Bundesamt, Statistisches Jahrbuch 2002 für das Ausland, p. 200.

Hegel's consistent entire picture of production

To get Hegel's consistent entire picture of production we pull down the wall between human production of (mainly) material goods and related services within the human world and the biological production of human beings within the natural world. The first is based on economic discipline and reported by Official Statistics according the System of National Account SNA of United Nations, and the second is based on biological discipline and reported by Official Statistics in a different context if at all. We have to eliminate obvious contradictions between production processes in biology and in human economy. Firstly, goods and services are evaluated in energy units in the natural world, and in money units in human world; how to eliminate this contradiction? Answer: By the requirement to issue human money then and only then when there is coverage in energy (of humans or different natural resources); thus we consider energy as absolute reference of human money. Secondly, any good and service has its price in energy units in the natural world, and only scarce goods and services within human world; how to eliminate this contradiction? Answer: Time will come where any non-scarce good of present will turn into a scarce good in future. Thirdly, within the natural world all markets occur as dual markets; this characteristic is unknown in human economic theories; how to eliminate this contradiction? Answer: By introducing the dualism principle of natural science and philosophy into economic theories, too. After this elimination we look at the result, and we reflect wealth and poverty phenomena in this consistent entire picture. From this picture we get the decisive message that wealth and poverty are dual phenomena like views on upper and down side of the same coin, or like the interpretations "deer are grazing on a meadow" or "seeds of grass are waiting for transport" of the same natural scene, see above. The following graph illuminates this reflection:

The dual phenomena of wealth and poverty: Hegel's consistent picture of human production



This graph shows the geographical distribution of wealth and poverty of humans in different countries, measured by the leading indicator "Income 1998 per capita in US \$" of human world producing mainly material goods and related service; classified in the groups "Low (\$760 and less, red color)", "Lower middle (\$761-3030, flesh-colored)", "Upper middle (\$3031-9350, sandy)", "High (\$9360 and more, bright)", and "No data (white)". Using the same colors, this graph shows as well the geographical distribution of biological production of human beings, measured by the leading indicator "Number of population" of natural world; classified in the groups "60% of world population (red color)", "15% of world population (flesh-colored)", "10% of world population (sandy)", and "15% of world population (bright)".

The coincidence of red-colored countries of Africa and Asia with low material production and related services in human economy and equally high biological production of human beings in the natural economy is evident. It confirms the hypothesis that poverty (in terms of material production) and wealth (in terms of biological production) are dual phenomena, vice versa wealth (in terms of material production) and poverty (in terms of biological production) are dual phenomena as well. Subordinate is that this graph of World Bank refers to year 1998, in present this situation is worse because of the world population will exceed in 2011 the number of 7 Billion people and was below 6 Billion people in 1998. Can we find a reason for this development that the poor produce more human biomass and less material products, and vice versa the wealthy produce more material products and less human biomass? Answer: Yes, we can; the key to understand it is imbedded in the natural law of conservation of energy. Like any person in human world can spend its money per year only one times, the equivalent of money within the natural system (and absolute reference for human money) any creature including man can spend only one times as well: The more energy it uses for material production within a period, due to this natural law of conservation of energy the less energy it can use for biological reproduction in the same period, and vice versa. Human strategies to respond to the phenomenon of poverty (as well as the dual phenomenon wealth) have to consider this natural law. In general this means that countries with high poverty (in terms of income in \$) could shift their (human) energy away from biological production to more material production, and vice versa countries with high wealth (in terms of income in \$) could shift their (human) energy away from material production to more biological production. The population policy of China (with parallel decrease of population and extension of material production) since the 1980th years is in line with this strategy derived from Hegel's consistent picture of production, and it shows impressing results; far more than those from different strategies (remittances, piracy), I think.

The natural solution of poverty

What I mean with *natural solution* of poverty phenomenon? Answer: The sustainable reaction of the superior natural order on actions of humans within their subordinate human orders and societies. Because of humans can't avoid this reaction (in case of a conflicting situation), it equals a solution indeed. Starting point to find this solution is the top aim of the economic (and social) order of natural world which is *conservation of life*. In general, the present poor (in developing countries) realize this top aim, indicated by high birth and net reproduction rate. And the present wealthy (in developed countries) don't realize it, indicated by low birth and net reproduction rate. Rather and for sake of their self-realization in present these wealthy follow other aims of material production and related services of human societies, indicated by high Gross Domestic Product GDP and high income per capita. But material production and related services is peripheral or subordinate production within the natural world what counts is production of living biomass. What is impact? We observe: Material goods and related services of developed and wealthy countries are transferred to developing and poorer countries. Vice versa: By migration human beings (in terms of natural world also biological products) are transferred from developing to developed countries. Different from material goods which aren't able to reproduce themselves, human beings are able and will reproduce themselves after migration, undoubtedly. Hence we conclude the scenario: Future generations of the present poor by migration if necessary, step by step will replace the missing future generations of present wealthy in their home states and societies, and thus will participate in their wealth. This scenario we observe as *demographic change* already in present. It is a sustainable reaction of the natural order on the violation of its top aim *conservation of life*. Using the introduced terminology, it is the natural solution of the poverty phenomenon. Final remark: Poverty in human society is a social phenomenon produced by human economic orders/systems and measured in their own value categories. Hence it is not amazing that

United Nations Habitat up to now is able to monitor the continuous increase of this phenomenon, and is not able to suggest concepts how to respond to this immense challenge of present and future although “*The eradication of poverty is essential for sustainable human settlements*” (Citation from Article 28 of UN Habitat Istanbul Declaration II Goals and Principles).

Bibliography

Maier, H. (2003) What is the Money Equivalent in the Nature? Results of a Hedonic Approach. Paper presented to the 54th Session of the International Statistical Institute, International Congress Centre, August 13-20, 2003, Berlin, Germany, *Werkstattheft aus Statistik und Ökonometrie*, ISSN 1439-3956.

Maier, H. (2004) Basic Constitutional Approaches to Meet Demographic Ageing Seen from the Economic System of Nature, Paper presented to the International Statistical Conference “Statistics: Investment in the Future” organized by the Czech Statistical Office in cooperation with Czech National Bank and University of Economics in Prague under the auspices of Mr. Vaclav Klaus, President of Czech Republic, September 6-7, 2004, Prague, Czech Republic, *Werkstattheft aus Statistik und Ökonometrie*, ISSN 1439-3956.

Maier, H. (2004) Explaining and Meeting Problem Patterns of Social Change on the Base of a Postulated Economic System of Nature, Paper presented to SCORUS 24th Biennial Conference on Regional and Urban Statistics “Understanding Change”, Minnesota Population Centre, University of Minnesota, Minneapolis, U.S.A. 19-21 May 2004 (unpublished).

Maier, H. (2004) Economic Explanation of Natural and Social Phenomena, Research Results on an Economic System within Nature, Paper presented to Habitat/UN, Nairobi/Kenya, July 19-30, 2004 (unpublished).

Maier, H. (2005) Economic Explanation of natural and social phenomena, is there an economic system within the nature? Paper presented to 15th International Conference in input-output techniques of International Input-Output Association (IIOA) in Beijing/China, June 27-July 1, *Werkstattheft aus Statistik und Ökonometrie*, ISSN 1439-3956.

Maier, H. (2006a) Introduction to Nature’s Economic and Financial System, Features, Impact on Human Society and Politics, *Werkstattheft aus Statistik und Ökonometrie*, ISSN 1439-3956.

Maier, H. (2006b) New Indicators to Measure Economic Efficiency, Wealth and Poverty on Basis of Natural Economics, Paper presented on occasion of the 25th Conference on Urban and Regional Statistics Research, Globalization Impact on Regional and Urban Statistics, 30th August to 1st September 2006, Wroclaw University of Economics, Wroclaw, Poland, *Werkstattheft aus Statistik und Ökonometrie*, ISSN 1439-3956.

Maier, H. (2007) Applying Leontief’s input-output concept to nature’s economic and financial, Result and conclusion, Invited paper presented to the Sixth Annual Conference of the Leontief Readings on the centenary of the birthday of Wassily Leontief, Problems of Economics and Politics, 29-30 September 2006, House of Scientists St. Petersburg, Russia, *Werkstattheft aus Statistik und Ökonometrie*, ISSN 1439-3956.

Maier, H. (2007) New Indicators to Measure Wealth and Poverty within the Natural World, An Approach to Respond to the Global Challenge of Poverty, Paper presented to the 56th Session of the International Institute, 22-29 August 2007 in Lisbon/Portugal, *Werkstattheft aus Statistik und Ökonometrie*, ISSN 1439-3956.

Maier, H. (2008) On the economic role of social indicators in urban and regional planning, Paper presented at IAOS Conference on Reshaping Statistics, Shanghai, 14-16 October 2008, *Werkstattheft aus Statistik und Ökonometrie*, ISSN 1439-3956.

Maier, H. (2009) The present banking and financial crisis reflected in the financial order of the real world, Paper presented on occasion of the International Statistical Institute, 16-22 August 2009, Durban South Africa, *Werkstattheft aus Statistik und Ökonometrie*, ISSN 1439-3956.

Maier, H. (2010). The two faces of social indicators and the natural solution of poverty phenomenon, Invited lecture at Sociological Institute of Russian Academy of Science in St. Petersburg/Russia, Tuesday 8th June 2010 (unpublished).