

Neuroeconomic Model (NeM) of Economic Psychology (EP)

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Abstract

The Paradigm on Bounded Rationality (BR) is much criticized, giving rise to the field of Economic Psychology (EP), but so far, a comprehensive alternative to BR is not presented!

Neuroeconomics (NE) is a new transdisciplinary field integrating Economics, Psychology and Neurology, based on the Triune Brain Model (TBM). Neuroeconomic trials identify general risk-willingness as a general parameter of economic behavior replacing the BR dogma. NE rediscovers the classical Tempers guiding individual economic behavior:

- 1) Sensitivity-training on the Tempers improve collaborative skills and creativity by the Pilot-in-the-plane entrepreneurship
- 2) Stress-management by meditation exercises and Biofeedback, increases QALY
- 3) The marginal utility of Income declines by economic growth

Economics as Utilitarianism operates as Quality-Adjusted Life Years (QALY) giving priority to the following macroeconomic-policies for the common best:

- 4) Economic equalization by Universal Basic Income (UBI) increases total QALY
- 5) Sustainable economy, subsidizing alternatives to fossil energy (ES), is the key to implementation of the Paris Agreement 2015

Economic-political challenges for dissemination of Socioeconomics are discussed.

Keywords

Triune Brain, Transdisciplinary Synthesis, Big5 Tempers, UBI, Sustainable Development.

Introduction

Introduction

Shortcomings of the Neoclassical Paradigm on Bounded Rationality (BR) [Simon, 1978] have been demonstrated i.e. by Economic Psychology (EP) [Kahneman, 2002] focusing the Prospect Theory on the asymmetry in our forecasts on loss and gains. A textbook on EP has reviewed existing studies [Kirschler&Hoeltzl, 2018]. After an introductory chapter on the history and application of Economic Psychology the book has 3 groups of each 3 chapters:

- **A:** Chapter 2-4 discuss the building blocks of economic behaviour: decision-making from normative and a descriptive perspective as well as lay theories.
- **B:** Chapter 5-7 address the major markets on which economic behaviour occurs as an interaction between individuals and companies or institutions: consumer markets, labor markets and financial markets.

- **C:** Chapter 8-10 focus on society-level topics: collective cooperation, collective production and collective prosperity.

Kirschler & Hoeltzl present a multidisciplinary model of EP, where specific aspects of economic behavior are outlined from a psychological point of view. However, abandonment of the general paradigm of Bounded Rationality (BR) [Simon, 1978] implies, too, abandonment of the overall integration of individual and social economic findings. In the same period, we have experienced a technological quantum leap making the modern world far more complex and difficult to understand. A transdisciplinary synthesis requires that economy and psychology become united like hydrogen and oxygen form water. So, this study aims to develop a positivist transdisciplinary model of Economics to replace BR.

Neuroeconomics (NE) is a new positivist alternative to BR integrating

Economics, Neurology and Psychology as Socioeconomics by the Triune Brain (TBM), see Figure 1.

Guyana has also seen a considerable increase in Spanish-speaking migrants, particularly from Venezuela. According to local newspapers, many educational systems have begun to enrol a growing number of Spanish-speaking students, causing language-related challenges for schools and teachers [6,7].

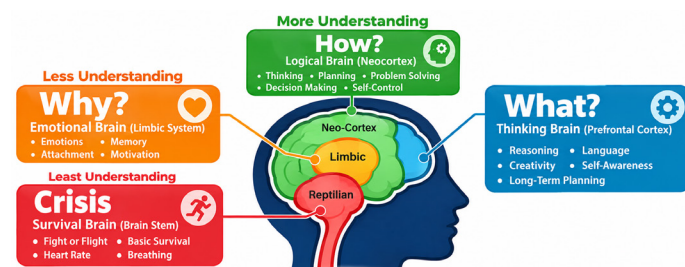


Figure 1: The Triune Brain (TBM) and Neuroeconomics (NE).

This study searches for a Neuroeconomic model of Economic Psychoaegy (EP).

Method

NE follows the standard method of empirical science as developed in two historical phases. The concept of the scientific method was originated by Aristotle advancing the concept of science in three stages (1-3):

1. A scientific problem must be stated as a thesis with an antithesis reflecting the absolute opposite.
2. Search and list the most solid pro- and contraarguments as the base of an unbiased conclusion.
3. Conclude whether the thesis or the antithesis have the most solid arguments as a synthesis suspending the contradiction between thesis and antithesis.
4. This Antique concept of science by Aristoteles was drastically improved in the 18. Century by the British Empiricism, requiring that the arguments (P2) should be based on unbiased empirical data collected by statistical samples following mathematical-statistical laws of probability.

Application of these four general conditions of empirical science have resulted in such a quantum leap in our understanding of both the material world and Biology, that we have got a true technological revolution with improved practical tools and procedures in nearly all aspects of life. The backside of this success is that each subdiscipline, relying on a limited specialist dataset, removes the overall conclusion of EP longer and longer away from each of the included specialist disciplines. So, the study searches for a transdisciplinary synthesis of behavioral science (Socioeconomics. SE). For this purpose the study is structured as a review of neuroeconomic models integrating Neurology, Psychology and Economics. Such a review must fulfill the following 5 criteria to present a valuable neuroeconomic model [Rangel et al, 2008]:

1. **Problem Representation:** Identifying internal states (e.g. hunger, fatigue), external conditions (e.g., risk, reward magnitude), and available courses of action.
2. **Valuation:** Assigning a subjective value to each potential action or choice based on expected benefits and costs.
3. **Action Selection:** Comparing the assigned values and choosing the option with the highest estimated value.

4. **Outcome Evaluation:** Experiencing and processing the result of the decision.
5. **Learning & Updating:** Using outcome evaluation to update internal representations and valuations, thereby improving future choices (often driven by neurotransmitters like dopamine).

International scientific databases like PubMed, EconLib and PsychInfo are searched for relevant findings on "Neuroeconomic model" fulfilling the criteria 1-5.

Results

Review of neuroeconomic models of decision-making

In 2024, 20 top-neuroeconomic studies were reviewed by SciSpace. The closest attempt to a model was a review of the influence of neurotransmitters on the behaviour and decision-making of individuals in economic matters [Rotschedi et al, 2024]. However, the study is not a comprehensive neuroeconomic model. but states that neuroeconomics has the potential to become a key tool for improving quality of life and enhancing scientific knowledge at the interface of different disciplines. In 2026, a neuroeconomic model (NeM) fulfilling the criteria of Rangel et al is published [Larsen, 2026]:

Ad 1: NeM is based on Figure 1. TBM, which relates internal mental states like emotions and reasoning to standard economic behaviors like consumption, production and distribution as well as situational conditions like risk and reward magnitude and available courses of action.

Ad 2: The outcome of EP actions are assessed by their Quality (QALY-Addressed Life Years), which is already an established outcome of Medicine. If the QALY of a specific action is not already researched, it must be so by a standard scientific sample investigation, before it can be accepted as a valued finding in EP. So, within Economics EP is most close to Health Economics.

Ad 3: To choose one among a series of comparable actions, serving the same functional purpose, the QALY of all the alternatives must be known. The action with the best QALY is also the best EP action.

Ad 4: In contrast to an abstract financial indicator like the GDP, QALY is a qualitative indicator with subjective associations to related health interventions. This makes EP much more relevant for improvement of economic interventions than purely abstract financial outcomes of standard Economics.

Ad 5: The basic parameter of EP is the general risk-willingness of economic behavior as demonstrated by a broad set of trials [Dohmen et al, 2011]. So, the parameter of general risk-willingness represents a new empirical alternative to the Neoclassical dogma of Bounded Rationality (BR).

Neuroeconomic Model (NeM)

Figure 2 shows a Neuroeconomic Model (NeM) fulfilling the criteria [Larsen, 2026]:

- The axes represent the basal mental integration processes identified by TBM:
- The X-axis represents emotions arising from LS (ANS) to the ventromedial Prefrontal Cortex (vmPFC) [D'Argembeau, 2013].
- The Y-axis represents the Prefrontal Cognition (FC) [Fuster, 2001].

This individual balance state between LS and FC was already discovered in the Antique as the human Tempers, which recently has

been rediscovered as the Big5 Taxonomy [Goldberg, 1993].

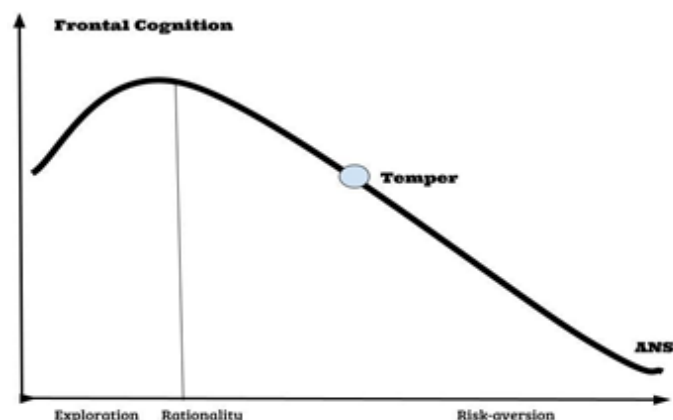


Figure 2: Neuroeconomic Model (NeM).

In All, NeM illustrates the dialectical nature of cognition, which was intuitively understood already 1806 by Hegel [Saxo, 2022]:

- Autonomic, fast intuitive processes arising from the Limbic System (LS) to the vmPFC.
 - Reflexive, slow sensory processes from the Dorso-lateral Prefrontal Cortex (FC).
 - The convexity of the curvature of Figure 2 is demonstrated by Neuroeconomic trials:
- ⑤ ① Exploratory choices combine a low open cognition (Y-axis) with low Limbic activation (X-axis) [Daw et al, 2006].
- ⑤ ② Complex choices part cognition in strongly cognitive active rational decisions with moderate autonomic arousal and strongly aroused risk-averse decisions with a low cognitive activation [Fuster, 2001].

Referring to the origins [Mill, 1848], Economics searches for the best utility of goods and services (Utilitarianism). NeM explains the neural processing of economic behaviors in accordance with the general standard of healthcare using Quality- Adjusted Life Years (QALY) as indicator of utility. In all, NeM is operated in Economic Psychology (EP) with the following sub-sections:

- Results 2 on Behavioral Economics (BE)
- Results 3 on Socioeconomics (SE)

NeM and Individual Behavioral Economics (BE)

Individual economic behavior and the Big5 Taxonomy

A phenotypic study of personality traits has identified 5 different Tempers (Big5) [Goldberg, 1993]:

- Extraversion (outgoing/energetic vs. solitary/ reserved)
- Openness to new experiences (inventive/curious vs. consistent/ cautious)
- Conscientiousness (efficient/organized vs. extravagant/careless)

- Agreeableness (friendly/compassionate vs. critical/rational)
- Neuroticism (sensitive/nervous vs. resilient/ confident)

The Big5 Tempers correlate significantly with general risk-willingness [Dohmen et al, 2011] and have intuitive parallels to the the classical Tempers, see Table 1:

Table 1 illustrates, too, a 5th Temper, Open-mindedness, reflecting cognitive development related to the rise of the creative class [Andersen&Lorentzen 2006; Florida 2014]. The difference in the distribution of the Big5 among students in different Academic Majors are often moderate (about 0.5 standard deviation), but especially the share of Open-minded differs strongly among Majors [Vedel, 2016].

Table 1 shows the distribution of the Big5 2004 by general risk-willingness and genders as calculated from German data. An asymmetric distribution of both tempers and genders appears. Males have relatively few Neurotics, but many Open-minded and Extraverts. In contrast, females have relatively many Neurotics, but only a few Open-minded and Extraverts. The diversity of human economic behavioral patterns is far larger than realized by the BR dogma! The largest behavioral variant identified by research is Nudging [Thaler&Sunstein, 2009], where a person moves other persons in a predetermined direction by small friendly "Nudges" without any moralist norms. The dominance of Nudging is explained by the large share of Agreeables.

The shortcomings of the BR dogma and the diversity of personalities in the real world raises an urgent need for heuristic sensitivity training for collaborative skills. The Temper shows a person's non-reflected subjective comfort level with uncertainty and potential loss when pursuing a reward. High risk-willingness means being more likely to take bold actions, while low risk-willingness leads to safer choices to avoid failures. Males are more risk-willing than females [Dawson, 2023]. Asking people about their willingness to take risks "in general" correlates significantly with gender, age, height, and parental background [Thaler&Sunstein, 2009].

A good professional collaboration i.e. regarding human relations in management (HR) requires a mutual psychological understanding beyond the BR Dogma. The Dohmen Scale orders the Big5 Tempers by general risk-willingness [Dohmen et al, 2011]. This enables a simple heuristic sensitivity-training in HR on the Tempers by Figure 3, helping persons to improve their job-related collaboration. This Sensitivity Heuristic is preliminary tested by Guest Lectures on BE at Niels Brock Business School in Odense Dk, where both teachers and students replied to a Questionnaire. The distribution on the Dohmen Score of the participants differed not from the distribution in Table 1:

- Half of the respondents were Riskaverse with a Dohmen Score <4
- 15% were Rationalists (Conscientious) scoring 4-6 and 32% Riskwilling scoring >6 - The average score was 6 on the limit between rationality and risk-willingness.

Table 1: Comparison of Modern Typology and Classical Tempers.¹

Personality Type ²	Extravert	Open- Minded	Conscientious	Agreeable	Neurotic
Dohmen Score	9-10	7-8	4-6	2-3	0-1
Classic Temper ³	(Sanguine)	?	(Phlegmatic)	(Melancholic)	(Choleric)
Males Females	8% 2%	9% 3%	5% 8%	17% 20%	5% 17%

Source: 1: Recalculation of German data based on Dohmen et al, 2011; 2, Goldberg, 1993. 3. The classical tempers are in parentheses, because their position relies on intuition.

So, the following Heuristic is recommended for further testing by decentral, local sensitivity-training:

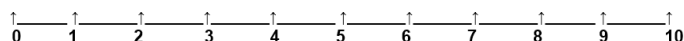


Figure 3: Dohmen Scale 0-10 on general risk-willingness.

The Heuristic in Figure. 3 applies on economic-psychological behavior as follows:

- Mark your own general risk-willingness on the Dohmen Scale and discuss with yourself, How does the Temper indicated in Table 2 fit with my self-recognition?
- Go on asking friends and colleagues to indicate their position on the Dohmen Scale, too, and compare their answers with what you expected!
- Over time note all the replies from other persons in Excel comparing their replies with the distribution in Table 1 as well as your personal experiences with their behavior.
- A simplified interpretation of the heuristic data is recommended on economic behavior. Firstly, should the term Neurotics not be applied among laymen. Secondly, Agreeables, are known to behave either like Rationalists or Open-minded. So, the following tripartition is recommended to understand economic behavior:

(i) <4 indicates a Risk-averse economic decision-maker.

(ii) 4-6 indicates a Rationalist economic decision-maker

(iii) >7 indicates a Riskwilling economic decision-maker

This NeM-based heuristic applies to general economic behavior. However, specific economic behaviors like consumption, production and investment have their own psychological pattern as elaborated below in the Subsections 2.2-5.

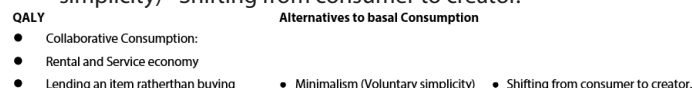
Consumer Behavior

Figure 4 illustrates the declining marginal QALY of income demonstrated by the UNDP [UNDP, 2005] demonstrating how general economic growth frees the individual from the natural dependency of income for consumption. This enables a stronger focus on other aspects of life as exemplified in the notes to Figure 4.

Mainstream Economics by BR has presupposed an individual maximization of happiness without any consideration of alternatives to individual consumption.

QALY Alternatives to basal Consumption

- Collaborative Consumption:
- Rental and Service economy
- Lending an item rather than buying • Minimalism (Voluntary simplicity) • Shifting from consumer to creator.



Finding pleasure and status in non-material experiences

Income

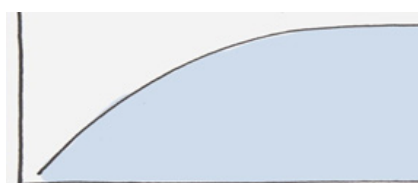


Figure 4: Declining Marginal QALY by Growth.

Production Behavior

The rise of the creative class focuses on Open-mindedness in all kinds of productive life. A pilot symbolizes a job-function that besides standard competences must have creativity to overcome unexpected insecurity. Figure 5 illustrates basal qualities of a creative pilot [Saraswathy, 2001]:



Key Qualities of Entrepreneurship

1. An entrepreneur should be pragmatic and stick to "Birds in the hand" instead of going for "Birds on the roof".
2. Forming a diversified team, like a "Crazy Quilt". Entrepreneurs can add qualities/means to the project.
3. Errors and surprises are inevitable to the entrepreneur, but he/she might see them, too, as new opportunities.
4. An entrepreneur should only that amount in his project, that he is willing to lose!

Figure 5: Pilot-in-the-plane Entrepreneurship.

Investor Behavior

Investments imply always some risk-taking! Financial investments with long-termed consequences presuppose a developed self-recognition of your own Temper to prevent subjective biases making important decisions, see also Table 1 in 1.1:

-Risk-averse persons should avoid risky decisions that give too much stress -Risk-lovers should be extra aware of the tendency of their Temper to underestimate the risk related to long-term engagements.

Stress-management

Figure 2 illustrates the general mental dynamics. See how autonomic in-depth relaxation may minimize the cognitive function to the level of Origo known as Nirvana in the Indo-European cultural history. This cultural history has been re-discovered in modern Medicine as an effective means for de-stressing [Benson&Klipper, 1975].

The rise of the creative class is part of the market-based economic growth.^{13,14} A simultaneous negative outcome is a rising load of job-related stress. WHO warns that Depression by 2030 will become the most heavy health burden [Marcus et al, 2012]. Many in the workforce may simply choose to retire early or reduce work hours to reduce their level of stress and improve health and life-expectancy. Worldwide, Job-related epidemic stress accounts for 2% of GDP, causing 3 million deaths and another million disabilities. The annual loss is estimated to be 100 million QALY, but is expected to triple before 2050 [ILO, 2019].

A relatively simple procedure for stress-management is meditative in-depth relaxation. Regular meditation increases human flexibility releasing subconscious stresses between the attention and Origo as illustrated in Figure 2. Already 3000 years ago, Indo-Europeans discovered mantra-meditation as means to reach Origo (Nirvana) freeing imagination as reported in the Bhagavadghita. Modern

secular mantra-meditation is practiced in a relaxed sitting position on a simple chair in a quiet place dissolving thoughts by a mantra. The long-term effects of a modern setting has been investigated at Harvard Medical School [Benson&Klipper, 1975]:

- I. Significant decline in the stress hormone (plasma cortisol).
- II. A meta-analysis finds that regular relaxation exercises complement physical fitness as a health activity that dissolves stress and anxiety.
- III. A 14-year, pre- and post-intervention study retrospectively assessed government payments to physicians for treating the TM and comparison groups. Payment to physicians declined 5-13% annually compared with subjects over 6 years.
- IV. The psychology of meditation is summarized [Holen, 2016].

The primary individual advice on mental health is self-control or stamina based on physical fitness [Oaten&Cheng, 2006]. Modern device for subjective control of the technical effect of meditative in-depth relaxation is Neurofeedback for subjective control of the technical effect of meditative in-depth relaxation is Neurofeedback i.e. by a simple Galvanometer. Such control of the personal meditation instruction by an experienced meditation teacher is especially relevant today, where the mutual knowledge between teacher and student often is relatively poor.

Socioeconomics (SE)

Introduction

Man is not simply an individual, but does live in a society, where we become affected by each other, common laws, regulations and conditions. An important scientific socio-economic progress was the Keynesian short-term fiscal policy to overcome economic recession/depression arising from the Deep Depression in the 1920s.

A similar breakthrough is still awaiting in positivist long-term economic policies.

For this purpose the following subjects are investigated below:

Society has an internal dimension, where the best distribution of income must be focused. Historically, economic growth has been associated with a parting of the population in wings of left and right, where the right wing prioritates the support to private entrepreneurship for the largest possible growth, while the left wing prioritates policies for economic equalization.

Society has, too, an external ecological dimension, too, because CO₂-emission in the atmosphere knows no national borders! So, global heating becomes an international rather than a national problem in

an industrialized world.

National Distribution of Income

A Dutch population study shows that the economic cost of an extra QALY is many times higher in the higher levels of income compared with the lower levels of income. This encourages economic equalization policies for a net QALY gain to the population making social solidarity a parameter of SE. In policy this implies the recommendation of Universal Basic Income (UBI), in accordance with more Nobel Laureates, to improve the total population QALY. Comparing the GINI-Coefficient across the industrialized world indicates, too, limits for equalization. As long as it's >33%, it's not seriously harming capital investments and market-based growth.

Table 2 shows the economic world order by Prosperity, Population and Planet (3P):

Broad conclusions regarding the economic world order:

1. China is now the largest economy with 19% of Global PPP. The US has 16%.
2. China has caught up with the US in QALY with PPP/capita at one third of the US.
3. The EU has 4 year more QALY than the US due to both a low Gini-coefficient and a more elaborated social welfare system. This is important evidence on social solidarity as a significant parameter of SE!
4. China has a strong hierarchical governmental system and the lowest household consumer rate (40%), which explains the fast Chinese economic growth.
5. China has the lowest share of mental disorders. So, Democratic involvement raises mental stress in the US, EU and India compared with the centralist China.

The International character of the Ecosystem

An updated forecast by IEA expects that the national plans for climate protection will reduce the global CO₂-emission by a third to 25 Gt per year in 2050 [IEA, 2025]. However, that is not at all enough to fulfill the Paris Agreement (PA15), because the rise in global CO₂ emission has been even faster than predicted in 2015. World Economic Forum [WEF, 2024] warns that intensified natural disasters by global heating by 2050 will cost \$12.5 Trillion USD or 10% of global GDP, cause the loss of more than 2 billion QALY per year and raising global health inequities in the most vulnerable populations, including women, youth, elderly, lower income groups and communities. Another macroeconomic study expects even worse climate damages, calculating the damages and derived costs on the base of local national changes in temperature, where others have calculated these

Table 2: World Economic Order 2025 by the 3P.

Parameter	USA	EU	China	India	Note
PROSPERITY					
Share of Global GDP	75.000	61.000	25.000	11.000	PPP is Purchasing Power Parity in USD. Global avg: 23.000
Household Cons. Rate	(16%) (70%)	(15%) (55%)	(19%) (40%)	(8%) (65%)	<u>Data Source:</u> Penn Wld Tab 2021
PEOPLE					
Unequal. by Gini%	42%	29%	47%	35%	Inc. to move from high to low for equal
Mental Disorders (%)	19%	17%	15%	17%	Slovakia:23% - South Africa:63
PLANET					
CO ₂ -emis. per capita	14 ton	6 ton (-32%)	9 ton	2 ton	Global CO₂ per capita:4.8 ton. Development
(Change 2000-23)	(-34%)		(+225%)	(+119)	2000-23: +16%
QALY Years	78	82	78	73	Global Average: 73

Source: Latest year in databases by International Monetary Fund (IMF) and World Bank 2024 or 2025).

effects on the base of the annual global changes in temperature [Bilal&Känzig, 2024].

Mainstream economics recommends to green the economy by a CO₂ Tax (ET) in accordance with the Nobel Awards to Pigou 1920, Norton 2018 and new case studies [Metcalf, 2020]. However, atmospheric heating by CO₂ has no national borders and a national ET loads the national competitiveness. In an internationalized economy with free international trade. The Biden Presidency introduced a new Western strategy, to make the US carbon neutral 2050 by subsidizing non-fossil energy (ES) [IEA, 2024]. Already, China subsidizes non-fossil energy i.e. electric cars and ES would, too, help the Democratic world to compete with China. Subsidizing alternatives to fossil energy (ES), instead of imposing an international tariff on CO₂ admission (ET) in the atmosphere, imply:

- (i) ES must be financed by taxpayers, but an ET on companies/institutions is, too, going to be pushed-over on ordinary citizens.
- (ii) The gross starting budget of ES is low, grows over time, and must be limited to the life-time of the subsidized production.
- (iii) A broad international ET peaks the budget from start and declines over time.

Other important global threats to the Ecosystem are pollution of earth and water by fertilizers used by modern HiTec-agriculture. This implies that alternative forms of ecological agriculture should be subsidized, too.

Summary on Global Prospects of Complex Economic Growth

A re-specification of the historical model of economic growth is required due to the complexity with both positive and negative growth effects. The monodimensional liberalist growth model must be restructured including the findings of negative side-effects to liberalist growth such as climate damages and job-related stress and Table 3 summarizes the prospects of a model combining positive and negative growth effects. The QALY-effect of liberalist growth refers to a UNDP-study [UNDP, 2005]. Negative climate damages are documented by international organizations:

- ☞ The climate damages are documented by the World Economic Forum [WEF, 2024].
- ☞ Job-related stress is studied by both the UN [Markus et al, 2012] and the International Labor Organisation [ILO, 2019].

The central conclusion from Table 3 is, that about 2035 we reach a global state, where a positive logarithmic growth function becomes out-balanced by negative exponential growth effects calling for

extraordinary solutions. Effective counteraction of such a negative growth scenario is discussed below.

Discussion of Restoration of the Growth Scenario

Accelerated stress-management by a diversity of in-depth-relaxation techniques is an effective intervention to strengthen individual mental resistance towards a stressful global outlook, but it relies primarily on a more effective public enlightenment to strengthen the bottom-up motivation of the population, which in itself is a long-term project with only a moderate ecological effect.

The Paris Agreement 2015 (PA15) is an international organization for coordination of the "greening the economy" by ES. An updated forecast [IEA, 2025] finds that the global CO₂-emission 2013-2024 has risen about 1% more per year than originally foreseen by the PA15, which outdates the actual 2050-plan calling for a new accelerated plan. So, to fulfill the original PA15, the global CO₂ emission must be extraordinarily reduced compared with the original PA15-plan. Such a line of development was in reality initiated by the Biden Administration [IEA, 2025], aiming to make the US economy green 2050 by subsidizing non-fossil energy (ES). Today, the best new wind/solar projects are as economically effective as conventional energy projects compared to their Levelized Cost of Energy (LCOE) or about 50 USD per ton. An incentive of 10% of LCOE or 6 USD per avoided ton CO₂-emission probably enough to accelerate the update of the PA15 plan for such accelerated transition from conventional to non-fossil energy alternatives.

A preliminary budget for an extraordinary green subsidy (ES) reducing CO₂ by 1 Gt
is estimated to **7*10⁹ ~ 7 Billion USD corresponding to 6% of global GDP.**

For comparison, the total annual net budget of the UN is in these years 4 Billion USD. So, a redoubling of the actual total net payments from the Member States to the UN Organisation, corresponds only to reduction of the global CO₂-emission by 0.5 Gt per year. So, it's recommended that the PA15 as soon as possible assures the necessary finance and organization to develop an appropriate update of its existing plan for reduction of the global CO₂-emission.

Due to the general character of this analysis further development of Artificial Intelligence (AI) is not expected to change the substance of the above conclusions.

Table 3: Key-factors of Global Economic Growth, 2035.

QALY Parameter	Global QALY (Millions 2035)	Explanatory notes on the sources of calculation
Liberalist Growth	800	UNDP ⁹ shows a significant relation between GDP and QALY: 1.5% real growth in GDP per year raises QALY by about 0.1 in 2035.
Climate Damages	-650	WEF ¹⁰ expects losses of 2 Billion QALY in 2050. This model implies a calculated loss of 650 Million QALY in 2035.
Job-related Stress	-150	ILO ¹¹ calculated the global loss of QALY by stress to 100 million with an exponential rise. This implies a calculated loss of 150 million QALY 2035.
Net QALY Effect	0	The market-based growth, redoubling QALY from 40 to 80 in the last 2 centuries, turns now around and becomes negative about 2035, unless significant political changes are implemented!

Note: Economic solidarity as indicated by the Gini-coefficient is a parameter of QALY.

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