

# SOCIAL FUTURING, MODERN AND ANCIENT

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## ABSTRACT

This paper reviews and compares two approaches to the new, holistic and multidisciplinary concept “Social Futuring,” which are expressed in two indices based on this concept, entitled the “Social Futuring Index” and the “AAA Index.”

Broadly speaking, the Social Futuring Index is indebted to the broader context of modern social sciences, while the “AAA Index” attempts to update the scholastic moral philosophy, which was based primarily on the insights of Aristotle and Augustine, as combined by Thomas Aquinas (hence the “AAAs Finally, we present the key elements of both indices and their measurement for individual countries in a comparative perspective.

**Keywords:** social futuring, social entities, Social Futuring Index, AAA Index, good life, normative standards, pillars.

## 1. INTRODUCTION

The new, holistic and multidisciplinary concept “Social Futuring” (SF) has been expressed in two indices based on this concept, entitled the “Social Futuring Index” (SFI) and the “AAA Index.” Arising at the intersection of philosophy, psychology, sociology, economics, political theory and geopolitics among many other fields of social sciences social futuring and its application as an index addresses both academia and policymakers.

The SFI is indebted to the broader context of modern social sciences, while the “AAA Index” attempts to update the scholastic moral philosophy, which was based primarily on the insights of Aristotle and Augustine, as combined by Thomas Aquinas (hence the “AAAs”). The most unique characteristic of the SFI is its fixed normative, analytical and discursive framework, the center of which is “a good life in a unity of order”. The “AAA Index” presumes the validity of the definition of man is as a “rational,” “conjugal,” “productive,” “political” and “spiritual animal” as much in the 21<sup>st</sup> century A.D. as the 4<sup>th</sup> century B.C., the 5<sup>th</sup> or 13<sup>th</sup> centuries A.D. Finally, we present the key elements of both indices and their measurement in a comparative perspective.

## 2. CONCEPT AND MEASUREMENT OF MODERN SOCIAL FUTURING

The holistic concept of SF<sup>2</sup> expresses the readiness of social entities in their ability to preserve a good life for their members in a “unity of order” through strategic management of future changes. The

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<sup>2</sup> For the details of the normative, analytical, and discursive frameworks of SF and their embeddedness in the classical and contemporary social science literature see: Csák (2018), Szántó (2018), and Aczél (2018).

framework for a good life is provided by the four normative standards Peace & Security, Attachment, Care, and Balance, with strategic management required in the fields of ecology-geopolitics, technology, socio-economy, and culture – which have been called pillars. The degree of social futuring is expressed through the quantification of the SFI,<sup>3</sup> the logic of which is derived from the multidisciplinary conceptual foundations just summarized. The SFI is conceived as the matrix of the above-mentioned normative standards and pillars. As a result, social futuring is based on nine essential dimensions, and twenty-eight selected indicators.

## A) NORMATIVE STANDARDS

The Social Futuring Project defined the following four normative standards:

**I. Peace & Security** is the minimum substance of a “unity of order”, which enables social entities to reproduce, raise children and provide for themselves and others a safe environment, make predictions, set goals and functionally influence their future operation using fundamental assets.

**II. Attachment** is essential for healthy bodily, psychological, intellectual and spiritual human development. The most basic unit of Attachment is the Family, which determines the consciousness of what a “relationship, dignity, equity, authority and hierarchy are; what is good and bad, just and unjust; what is love, gift and reciprocity” (Csák 2018, 37). Family bonds are also essential in enabling Attachment to larger communities such as nations or religious groups.

**III. Care** (Material Advancement and Freedom) is defined as “the maintenance of material goods ...entailing ...production, distribution and acquisition; use and disposition of private or public goods; extendable management skills; and, therefore an image of wealth and the nature of work” (Csák 2018, 37-38). Freedom is self-determination and self-reliance to actualize one’s potential control one’s own fate.

**IV. Balance** is a real and perceived social state free from extreme social differences and reflecting responsibility across generation— the precondition of a good life, wellbeing and generativity, freeing people from unproductive societal comparisons (such as envy).

These four normative standards are ranked in hierarchical order: without the minimum of Peace & Security, there can be no Attachment, Care or Balance, without the minimum level of Attachment, there can be no Care and Balance, and without the minimum level of Care, no Balance is possible.

The Social Futuring Project started by developing a country-level index for three practical reasons. First, a country is the largest social entity with a defined leader (the government or state) that represents the constituent members, generally through democratic institutions. Second, data are available for many countries, allowing the first indices to be constructed from current data sources rather than requiring the research project to solve two problems at once: constructing an index while generating new data. Third, just as the concept of SF needed to define itself in comparison to other concepts or approaches in the social sciences, a new index must establish its place among existing indices.<sup>4</sup> Therefore, starting with countries that are part of other currently existing indices allows the SFI to distinguish itself by highlighting the differences from and similarities to such other regularly published indices.

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<sup>3</sup> The detailed explication of the logic of the SFI can be found in Szántó et.al. (2019).

<sup>4</sup> For the comparison of SFI with eight similar global indices see: Kocsis (2020).

## B) PILLARS

According to similar logic, we can differentiate and define the following four pillars:

1. The **Ecological-Geopolitical pillar** captures a social entity's basic assets (energy, water, land, etc.) and geopolitical positions without which it would not have resources to maintain itself and provide its members stability and freedom of choice.

2. The **Technological pillar**, by making life easier, assures the undisturbed development of a social entity's general functionality.

3. The **Socio-Economic pillar** includes the material (capital, labor, schooling and GDP, etc.) and social factors (family, fertility, work-life balance, inequalities, etc.) of the reproduction of human life.

4. The **Cultural pillar** relates to the factors of religiousness and traditions, focusing on the role of social institutions that overarch generations.

## C) PYRAMID & DIMENSIONS

As a result, the matrix-like framework of the four normative standards and the four pillars combined defines the following nine essential dimensions of the SFI:

(i) **Defense & Safety:** The ability and sense of duty to create and maintain a country's integrity and inner and outer order.

(ii) **Assets:** Creation and maintenance of critical and strategic resources.

(iii) **Functionality:** The systematic and creative deployment of natural and man-made infrastructure in order to create competitive foundations.

(iv) **Patriotism:** The ability to translate family and interpersonal attachments to belong to greater communities such as the nation.

(v) **Family:** The creation of primary bonds between parents, children and close kin.

(vi) **Spirituality:** The transcendent efforts (like religion and tradition) that support the long-term subsistence of a social entity.

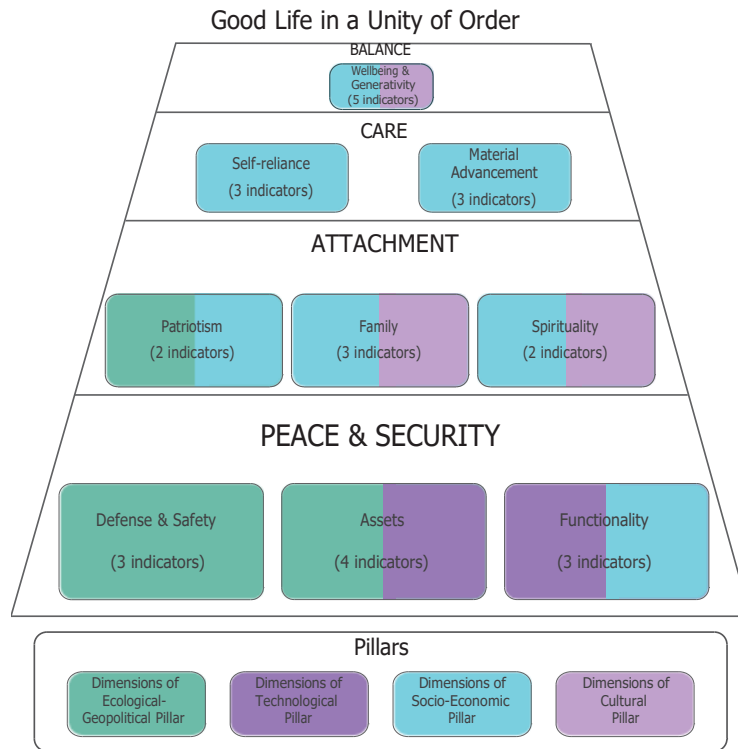
(vii) **Self-reliance:** Members of a social entity – using their abilities – exploit their opportunities in order to provide wellbeing for themselves and their loved ones.

(viii) **Material Advancement:** The provisioning and maintenance of material existence without jeopardizing next generations' room to maneuver.

(ix) **Wellbeing & Generativity:** The management of extreme social differences, the harmonization of reality and expectations, reaching contentment by avoiding the use of opiates and promoting others' development.

These nine dimensions may be classified under two aspects: (1) the basic forms of social futuring, namely (i) proactive, when social entities are able to influence future changes directly in order to deploy their long-term potential, (ii) active, when they are able to improve their functional operation by exploiting opportunities resulting from expected changes, and (iii) reactive, when in order to maintain their way of life, the entities can manage the risks that may stem from future changes; (2) whether the

phenomena and processes inherent in the different dimensions can be influenced by targeted policy measures (policy sensitivity, yes/no).



*Figure 1:*  
Outlines of the Social Futuring Index

#### **D) METHODOLOGY USED TO COMPILE THE SFI**

The SFI is a composite index of sub-indexes comprising a hierarchical indicator system based on the conceptual framework defined by the Social Futuring Initiative. Simply put, the SFI is a weighted average of carefully selected indicators, which best capture the elements of SF.<sup>5</sup>

The SFI comprises 28 indicators which were selected with the assistance of normative standard based expert panels. All indicators are normalized – after outliers were handled – on a scale of 0 to 100. The indicators are weighted and aggregated according to the structure of the SFI framework.

In order to best grasp and convey the concept of the indicator, a hierarchical structure was selected from a number of indicator system structures. The hierarchical structure makes it possible to create sub-indicators at different levels to examine the contexts of the conceptual framework, which

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<sup>5</sup> For the detailed description of the methodology used to compile the SFI see: Bóday (2020).

makes the analysis even deeper. In general, such indicator systems are the most suitable choice for the better presentation of complex, multi-dimensional phenomena.

In order to connect the normative standards with the pillars defined in the overall framework, definitions were prepared to describe the phenomena of nine essential paired intersections of the two aspects, based on which appropriate indicators could be selected.

- be without or have limited overlap with other indicators, and
- be associated with a measurable range.

Several workshops served to finalize and fine tune the indicator set to avoid overlaps, as well as to maintain a balance between the different elements of the framework. The first set covered around 120 indicators, which was reduced to the final 28 essential indicators, which are deemed relevant and meet the above-mentioned basic principles.

## E) INDICATORS

### PEACE AND SECURITY NORMATIVE STANDARD - DEFENSE & SAFETY DIMENSION

**1. Political stability and absence of violence or terrorism** (direction: positive, weight: 3.33%): Political stability and the absence of violence or terrorism measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism. The estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5. *Unit of measure:* index (-2.5 to 2.5), *Source of data:* World Bank (2020)

**2. Robbery** (direction: negative, weight: 3.33%): Robbery is a property crime that involves the use of violence or threat of violence. Theft of property from a person, overcoming resistance by force or threat of force. Robbery included muggings, bagsnatching, and theft with violence. *Unit of measure:* per 100,000 population, *Source of data:* UNODC

**3. Military expenditure** (direction: positive, weight: 3.33%): Military expenditure data from SIPRI are derived from the NATO definition, which includes all current and capital expenditure on armed forces, including peacekeeping forces; defense ministries and other government agencies engaged in defense projects; paramilitary forces, if these are judged to be trained and equipped for military operations; and military space activities. *Unit of measure:* percent of GDP, *Source of data:* World Bank (2020).

### PEACE AND SECURITY NORMATIVE STANDARD - ASSETS DIMENSION

**4. Ecological balance** (direction: positive, weight: 5%): The difference between a population's Ecological Footprint and a country's biocapacity. If a country's demand exceeds its biocapacity, it has an ecological deficit. If a country's biocapacity exceeds its Ecological Footprint, it has an ecological reserve. *Unit of measure:* global hectare, *Source of data:* Global Footprint Network

**5. Arable land** (direction: positive, weight: 5%): Arable land (hectares per person) includes land defined by the FAO as land under temporary crops (double-cropped areas are counted once), temporary meadows for mowing or for pasture, land dedicated to market or kitchen gardens, and land temporarily

fallow. Land abandoned as a result of shifting cultivation is excluded. *Unit of measure:* hectares per person, *Source of data:* World Bank (2020)

**6. Net energy imports** (direction: negative, weight: 5%): Net energy imports are estimated as energy use minus production, both measured in oil equivalents. *Unit of measure:* percent of energy use, *Source of data:* World Bank (2020)

**7. Renewable water resources** (direction: positive, weight: 5%): Total annual actual renewable water resources per inhabitant [Total renewable water resources per capita] = [Total renewable water resources]\*1000000/[Total population]. *Unit of measure:* cubic meter/inhabitant/year, *Source of data:* UN FAO (2020)

#### PEACE & SECURITY NORMATIVE STANDARD - FUNCTIONALITY DIMENSION

**8. High-technology exports** (direction: positive, weight: 3.33%): High-technology exports are products with high R&D intensity, such as those associated with aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery. (Data are given as percentages of manufactured exports). Because industrial sectors specializing in a few high-technology products may also produce low-technology products, the product approach is more appropriate for international trade. *Unit of measure:* percent of manufactured exports, *Source of data:* World Bank (2020)

**9. Road density (per capita)** (direction: positive, weight: 3.33%): Road density is the ratio of the length of the country's total road network to the country's population. The road network includes all roads in the country: motorways, highways, main or national roads, secondary or regional roads, and other urban and rural roads. The Global Roads Inventory Project is a harmonized global dataset of approximately 60 geospatial datasets on road infrastructure. The resulting dataset covers 222 countries and includes over 21 million km of roads, which is two to three times the total length included in the currently best available country-based global roads datasets. *Unit of measure:* km per capita, *Source of data:* Global Roads Inventory Project + own calculation

**10. Households broadband internet connection** (direction: positive, weight: 3.33%): Household broadband access provides a measure of the uptake of broadband technology by households. It refers to the share of households that have purchased subscriptions to fixed-line or mobile broadband services. *Unit of measure:* percent of households, *Source of data:* OECD

#### ATTACHMENT NORMATIVE STANDARD - PATRIOTISM DIMENSION

**11. Persons living abroad** (direction: negative, weight: 3.75%): Proportion of (estimates of) the international migrant (midyear) stock, by origin and the total mid-year population. *Unit of measure:* percent of population of origin country, *Source of data:* UN

**12. Registered voters who actually voted** (direction: positive, weight: 3.75%): The total number of votes cast (valid or invalid) divided by the number of names on the electoral register, expressed as a percentage. *Unit of measure:* percent, *Source of data:* IDEA

#### ATTACHMENT NORMATIVE STANDARD - FAMILY DIMENSION

**13. Employees working very long hours - work-life balance** (direction: negative, weight: 5%): Percentage of all employees usually working 50 hours or more per week. *Unit of measure:* percent, *Source of data:* OECD

**14. Value of family benefits** (direction: positive, weight: 5%): Total family benefits for a two-parent, dual-earner family for two children with a youngest child aged six, as % of average full-time earnings. *Unit of measure:* percent of average full-time earnings, *Source of data:* OECD

**15. Single person households** (direction: negative, weight: 5%): Share of single person households among all households. *Unit of measure:* percent, *Source of data:* Eurostat

#### ATTACHMENT NORMATIVE STANDARD - SPIRITUALITY DIMENSION

**16. Important to follow traditions and customs** (direction: negative, weight: 3.75%): On a scale from 1 to 6, where 1 means 'very much like me' and 6 means 'not at all like me'. *Unit of measure:* scale 1 to 6, *Source of data:* World Values Survey

**17. Self-reported religiousness** (direction: positive, weight: 3.75%): The share of those who claimed to be religious to the question. Are you: (1) A religious person, (2) Not a religious person, (3) A dedicated atheist? *Unit of measure:* percent, *Source of data:* World Values Survey

#### CARE NORMATIVE STANDARD - SELF-RELIANCE DIMENSION

**18. Mean years of schooling** (direction: positive, weight: 3.33%): Average number of years of education received by people ages 25 and older, converted from education attainment levels using official durations for each level. *Unit of measure:* years, *Source of data:* UNDP

**19. Unemployment rate** (direction: negative, weight: 3.33%): The unemployment rate is the number of unemployed people as a percentage of the labor force, where the latter consists of the unemployed plus those in paid or self-employment. Unemployed people are those who report that they are without work, but that they are available for work and that they have taken active steps to find work in the last four weeks. *Unit of measure:* percent, *Source of data:* OECD (2020)

**20. Life expectancy (mix)** (direction: positive, weight: 3.33%): Life expectancy at birth is defined as how long, on average, a newborn can expect to live, if current death rates do not change. The indicator is calculated as the product of the long term change (2010 to 2017) and the distance to the maximum of the current value. *Unit of measure:* percent, *Source of data:* OECD (2020)

#### CARE NORMATIVE STANDARD - MATERIAL ADVANCEMENT DIMENSION

**21. Household expenditure** (direction: positive, weight: 3.33%): Household spending is the amount of final consumption expenditure made by resident households to meet their everyday needs, such as food, clothing, housing (rent), energy, transport, durable goods (notably cars), health costs, leisure, and miscellaneous services. The indicator shows the latter's expenditure relative to GDP. *Unit of measure:* percent of GDP, *Source of data:* OECD (2020)

**22. Child relative income poverty rate** (direction: negative, weight: 3.33%): The percentage of children (0-17 year-olds) with an equalized household disposable income (i.e. an income after taxes and

transfers adjusted for household size) below the poverty threshold. The poverty threshold is set here at 50% of the median disposable income in each country. *Unit of measure:* percent of population 0-17 years old, *Source of data:* OECD (2020)

**23. GDP/capita (mix)** (direction: positive, weight: 3.33%): Gross domestic product (GDP) is the standard measure of value added created through the production of goods and services in a country during a certain period. The indicator is calculated as the product of long term change (2010 to 2017) and the distance from the OECD average of the current value in USD. *Unit of measure:* percent, *Source of data:* OECD (2020)

#### BALANCE NORMATIVE STANDARD - WELLBEING & GENERATIVITY DIMENSION

**24. Transition of educational attainment level from parents to current adults** (direction: positive, weight: 2%): Transition from the previous generation – from the preprimary, primary and lower secondary education of parents to tertiary education. *Unit of measure:* percent, *Source of data:* Eurostat

**25. Fertility (mix)** (direction: positive, weight: 2%): The total fertility rate in a specific year is defined as the total number of children that would be born to each woman if she were to live to the end of her child-bearing years and give birth to children in alignment with the prevailing age-specific fertility rates. The indicator is calculated as the product of the long term change (2010 to 2017) and the distance to the OECD average of the current value. *Unit of measure:* percent, *Source of data:* OECD (2020)

**26. Age dependency** (direction: negative, weight: 2%): The proportion of dependents (people younger than 15 or older than 64) to the working-age population (15-64). *Unit of measure:* percent of working-age population, *Source of data:* World Bank (2020)

**27. Antidepressant usage** (direction: negative, weight: 2%): Antidepressant drugs consumption in DDD. Defined daily dose (DDD) is the assumed average maintenance dose per day for a drug used following its main indication for an adult. *Unit of measure:* Defined daily dosage per 1 000 people per day, *Source of data:* OECD (2020)

**28. Gini-coefficient (income)** (direction: negative, weight: 2%): The Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus, a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality. *Unit of measure:* 0-100, *Source of data:* OECD (2020)

#### F) SFI Results. MAIN RESULT

Analysis of OECD countries' overall SFI ranking shows that the top three countries are Canada, Australia, and Norway, while the bottom three are Portugal, Japan, and Mexico. As for the range of the SFI, the maximum achievable score is 100 points, out of which the top country (Canada) scores 70 points, while the bottom country (Mexico) achieves 35.6 points. This range of values shows that there are significant differences between leading and lagging countries. There are instances, however, when only



marginal differences can be seen between countries (allowing for the possibility of draws due to equal scores).

For easier comparison, the countries are sorted into four quartiles (Q1, Q2, Q3, and Q4) based on their level of social futuring. The most futurable countries belong to the first quartile (Q1), the less futurable ones to the second (Q2), even less futurable ones to the third (Q3), and the least futurable ones to the fourth (Q4). In other words, countries in Q4 have the most work to do if they wish to improve theuturability, and these burdens gradually decrease as we approach the countries in Q1.

## OECD countries' overall SFI ranking

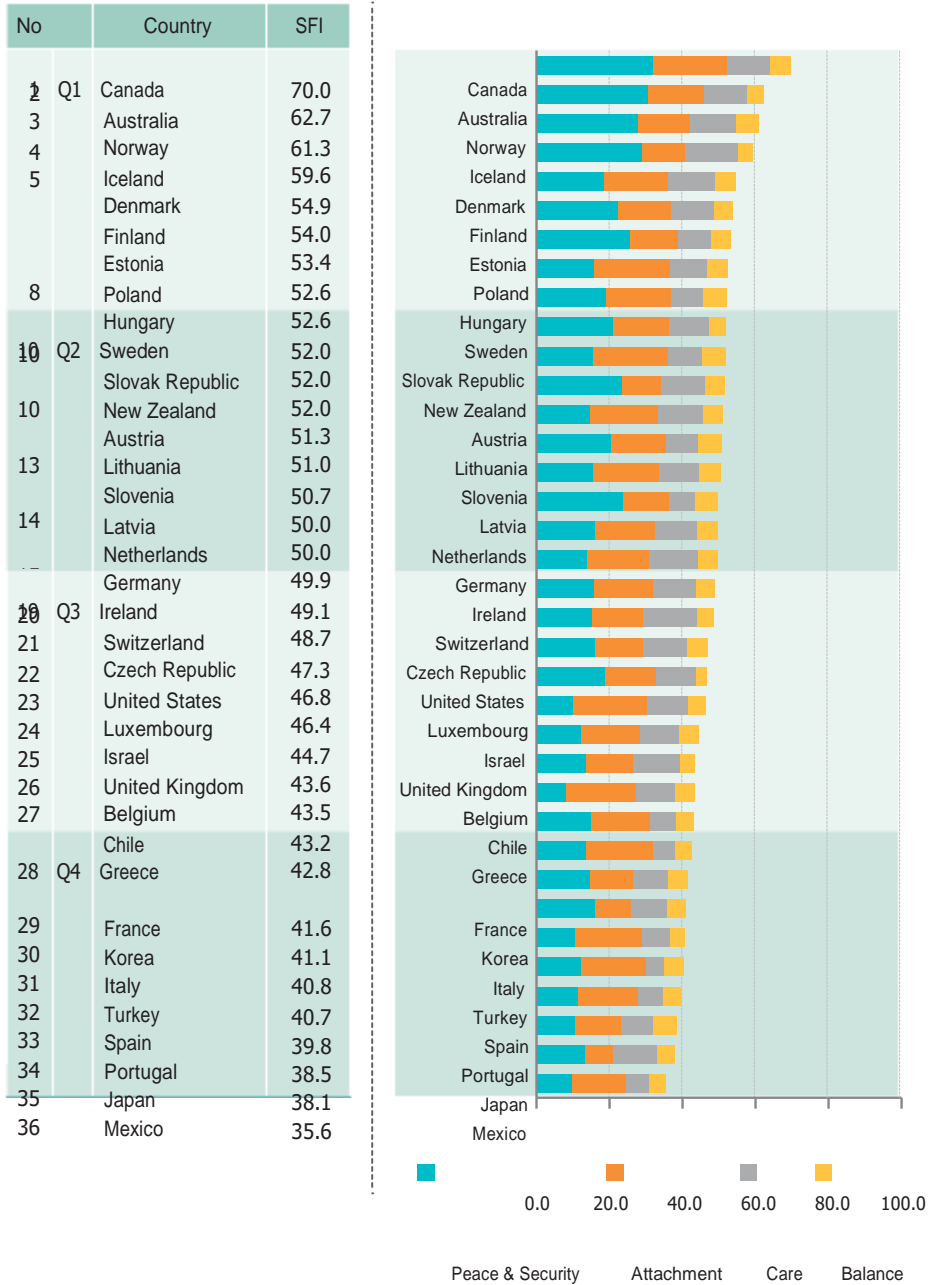


Figure 2:  
OECD countries' overall SFI ranking

### 3. A FURTHER PERSPECTIVE ON SOCIAL FUTURING: THE AAA INDEX

The “AAA Index” is an updated empirical application of scholastic moral philosophy and economic theory. The “AAA’s” are the three great ancient and medieval moral philosophers Aristotle, Aurelius Augustine and Thomas Aquinas. The first two provided the philosophical concepts, while Aquinas joined these elements into a systematic and comprehensive moral philosophy and economic theory.

The AAA Index is informed not only by the ancient and medieval roots of the scholastic moral philosophy, but also by the modern critique of country indices. Martin Ravallion (2012) distinguished two broad types of country indices, (i) theory-driven aggregate measures (e.g. GDP, poverty measures based on household income, net reproduction rate), which are characterized by limited scope (GDP/capita - market income), close correspondance to theory, and statistical practice to correct anomalies; ‘(ii) ‘mashup index of development,’ defined as a composite index for which existing theory and practice provides little or no guidance for its design. (e.g. HDI: geometric means of life expectancy, years of schooling and logarithm of income), which are characterized by broad scope (human development, flourishing, freedom, governance etc.), no or much less cogent theory, large gap between any claimed theory and actual implementation, and a lot of *ad hoc* choices in creating the composite index (Ravallion 2012, 1).<sup>6</sup>

However, Ravallion himself appears to make some strong assumptions, apparently presuming interpersonally comparable cardinal utility<sup>7</sup>--an assumption pronounced unscientific decades ago by Lionel Robbins<sup>8</sup>. Though cardinal utility is still often assumed by some economists, a more defensible position is that utility or welfare is only ordinally comparable; that is, we can generally say whether we prefer one state of affairs or bundle of goods to another, but not by exactly how much, and utility is not comparable between different persons; so that the frequent assumption that not only first but second differences of utility or welfare are easily measurable, not only for an individual but also between different persons, should be avoided. Instead of presuming interpersonally comparable cardinal utility, this paper adopts the much simple, more longstanding and more intuitive approach of comparing different persons, as expressed in the Two Great Commandments, rather than claiming to compare their welfare or utility.

The AAA Index is theory-driven in its conception of human nature. Aristotle famously defined a human being as a “rational,”<sup>9</sup> “conjugal,”<sup>10</sup> “social”<sup>11</sup> and “political animal.”<sup>12</sup> But the Church Fathers made further distinctions which Aristotle had not, so that, in addition to the four cardinal moral virtues which Aristotle’s teacher Plato had adumbrated—prudence, temperance, fortitude and justice—Aquinas added the three theological virtues faith, hope and charity, so that, beyond an account which (like Aristotle’s)

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<sup>6</sup> Anand (2018) objected to the shift from an arithmetic to a geometric mean for calculating the HDI because of its anomalous implications: Mike (2020) provided a concise description of the differences between the two approaches to country indices. The HDI was inspired by the work of Amartya Sen, who successively conceded the logical inadequacy of various definitions of cardinal utility and welfare, (Sen 1970, 1973, 1977, 1985) ultimately in favor of „capabilities,” but at the cost of reducing the approach to a political program in search of a coherent justifying theory. Mueller (2014), 91-93 describes the resulting difficulty in modern welfare economics.

<sup>7</sup> Ravallion (2012), 7, 27, 29.

<sup>8</sup> “There is no way of comparing the satisfactions of different people.” Robbins (1932), 140.

<sup>9</sup> “Human beings’ „soul...[is] in itself [partly] possessed of reason, [and partly] capable of obeying reason” Aristotle (1962) *Politics*, 1333a and men “naturally desire knowledge.”; Aristotle (1924), *Metaphysics*, 980a.

<sup>10</sup> “Between man and wife a natural friendship seems to exist, for they are more inclined by nature to conjugal than political society. This is so because the home is older and more necessary than the state, and because generation is common to all animals.” Aristotle. (1925) 1162a. Augustine (1987) developed and combined this view with a Christian perspective.

<sup>11</sup> “Man is by nature a social being.” Aristotle (1925), 1097b.

<sup>12</sup> “Man is by nature a political animal.” Aristotle (1962), 1253a.

distinguished the “scope” of the virtues, Aquinas added differences in their ‘method,’ for example, between rational metaphysics and scripturally based revealed theology (Aquinas 1986).

Moreover, where Aristotle had bisected moral philosophy into ethics and politics, (Aristotle 1925 and Aristotle 1962) Aquinas re-divided the field into three parts, based on the social unit described: the individual human person, the family household formed by marriage between a man and woman, and the political community, acting jointly through a common government. Hence Aquinas distinguished individual, domestic and political “prudence,” a term he used interchangeably with “economy”: individual, domestic and political economy (Aquinas 1981).<sup>13</sup>

The “AAA Index,” like the SFI, might be called an exercise in “social futuring”— an effort not merely to *forecast*, but also actively to *shape*, future conditions to facilitate a nation’s human flourishing. Moreover, rather than merely comprising an index of empirical economic data, the “AAA Index” combines metaphysical with empirical, biological and historical categories. The AAA Index attempts to apply the most broadly applicable moral philosophy to the broadest share of human population living in the 21<sup>st</sup> century. The AAA Index is based on the combination of three databases: the Maddison Project Database which estimates national population and GDP per capita back to AD 1; the Barro-Lee database of educational attainment, back to 1820 and projected forward to 2040 (Barro and Lee 2020 [2013]); and the data and demographic projections of the United Nations Population Division back to 1950 and projected forward to 2100.

A matrix of the indicators which comprise the index is shown and described below.

1. *Rational*. Rationality is measured by the share of the adult population with tertiary education (Barro and Lee 2013)—not because those with an advanced degree are more *rational* than other humans—the use of any human language is sufficient to establish rationality—but because data on tertiary education are also useful in projecting and forecasting national indices of real output.
2. *Conjugal*. That man is what Aristotle called a “conjugal” or sexual animal is reflected in the Net Marital Reproduction Rate (NMRR). The Net Reproduction Rate (NRR) is a composite estimating how many surviving daughters the average woman would bear if her experience matched that of women at all ages in the year for which the NRR is calculated (UN Population Division 2020). By counting only surviving daughters, the NRR adjusts the birth rate for mortality as well as fertility. This mortality adjustment makes the NRR more useful for many purposes than the more widely used Total Fertility Rate (TFR), because fertility tends to be higher when the mortality rate is higher. The “marital” reproduction rate adjusts the NRR to include only infants born within wedlock. Conceived in this way, the AAA Index avoids the contentious debate about “same-sex marriage,” since all such unions, as such, are sterile.
3. *Productive*. A third adjustment reflects an important aspect of social and economic development: the modern household specializes, like the ancient household, in the production and maintenance of human persons. But the ancient household also has two specialized modern offshoots: the for-profit business firm and the non-profit foundation. Unlike most other indices, the AAAI does not include such measures of market output as gross national or domestic product—though (as we will see) its components can be used to predict GNP or GDP. The third indicator is the share of national resources devoted to international monetary reserves which facilitate exchange of products among different countries . The reserve measure used in the AAAI is (1+ net monetary reserves/gross national income) — “net” meaning official reserve assets minus official reserve

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<sup>13</sup> <https://isidore.co/aquinas/english/Ethics1.htm>

liabilities (World Bank 2020, IMF 2020). Ordinarily, the reserve component will be greater than 1. But when a national currency is used as an official international reserve, such “reserves” are actually debts of the reserve currency country. This can lead to the result that the reserve currency country’s net reserves are actually negative, which encourages the expansion of its domestic and foreign debt.

4. *Social (or civic)*. A fourth adjustment reflects the fact that not only the modern business firm, but also the not-for-profit institution is a modern offshoot of the ancient household. While the modern business firm specializes in the production and maintenance of property, which Theodore Schultz (1961) called “nonhuman capital,” the non-profit institution specializes in the granting of gifts and performing acts of service to persons outside the modern household. The latter development is reflected in the Civil Society Participation Rate, as measured by IDEA (The International Institute for Democracy and Electoral Assistance: IDEA 2020).
5. *Political*. A further irreducible dimension of human nature is that man is what Aristotle called a *zoon politikon*, or “political animal.” This dimension is captured in the “AAA Index” by average voter turnout in national elections, as measured by IDEA 2020 (ultimately derived from national sources). Nearly all former communist or totalitarian countries have experienced sharp rises in their citizens’ participation in non-profit institutions, but also in political life, particularly voting for representative government. A couple of countries, including China and North Korea, are rated as having zero participation in political life. But since zero leads to undefined mathematical results in such cases, the “AAA Index” is aggregated from arithmetic averages. (The elaborate and widely cited Human Development Index [HDI] was originally based on arithmetic averages, but the formula was shifted to a geometric average, resulting in many anomalies, as Ravallion 2012 showed.)
6. *Spiritual*. The concept of creation *ex nihilo* is essentially philosophical, but simply did not exist in ancient pagan philosophy. Man’s understanding of his identity as not only a rational, conjugal and political, but also a created, and thus spiritual or religious animal<sup>14</sup>, is reflected in the rate of weekly worship, as recorded by the World Values Survey (WVS 2020) and General Social Survey (2020). The weekly rate of religious worship has a strong correlation with measures of fertility, including the NRR and TFR. Paradoxically, differences among religions and religious denominations chiefly concern intangible and thus immeasurable realities, such as the existence and nature of God or the human soul. Yet as the strong empirical link between worship and fertility shows, some of the strongest differences in empirical behavior stem precisely from people’s different understandings about such intangible realities.
7. *Animal*. Since humans are *animals*, not disembodied intellects, it is necessary to include three basic physiological aspects which humans share with other higher animals, the need for water, food, and also to exert or use energy.<sup>15</sup> Therefore, the “AAA Index” reflects these three animal realities: (a) the percentage of a nation’s population with improved water (UN Aquastat 2020); (b) a nation’s degree of food self-sufficiency (UN FAO 2020), and (c) the degree of national self-sufficiency in (for sustainability, renewable) sources of energy (US EIA 2020). Water, food and energy self-sufficiency are important *strategic* consideration for any country, since all are

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<sup>14</sup> This tradition began at least with Augustine (1984) and Augustine (2020), and was developed by Aquinas (1981).

<sup>15</sup> Aquinas (1982) appears to have been the first monograph in political economy advocating this approach with respect to food, energy and water as fundamental prerequisites for national self-determination.

prerequisites for national self-determination; but *renewable* energy self-sufficiency adds to these strategic considerations the long-run *sustainability* of any country's policies. Renewable energy independence is presented as a memo item. This item indicates how far most countries remain from sustainable energy independence; yet the relative country rankings change surprisingly little whether the AAAI energy indicator refers to total or renewable energy independence.

The AAA Index, then, is comprehensive regarding all the irreducible dimensions of human nature as a rational, conjugal, political and spiritual animal, applied to nations in the 21<sup>st</sup> century, and maps these dimensions rather simply into corresponding single indicators (along with three indicators to represent the three basic requirements of human animation).

To state these considerations in the negative, any nation is failing to flourish when its people are irrational or uneducated, when its population is shrinking, when its families are falling apart, when its people ignore the Two Great Commandments to love God and neighbor, or when they are oppressed through either their country's own or foreign governments. While comprehensive, the AAA Index could never claim to be *exhaustive* in measuring human flourishing. But the AAA Index still does represent a comprehensive and valuable starting point, and one simple enough for a single researcher to calculate.

The formula for the AAAI is:

$$aaaim = ter * netrespct * mnrr * [(civil+vote+ww)/3] * [(h2o + food + nrg)/3]$$

where *ter* = share of adult population with tertiary schooling, *mnrr* is the marital net reproduction rate [= *nrr*\**iw*, the net reproduction rate *nrr* times the share of births to married women *iw* ("in wedlock")], *netrespct* is (1 + net monetary reserves [official assets less official liabilities]) /GNI [=Gross National Income]), *civil* is IDEA's Civil Society Participation Rate, *ww* ("weekly worship") is the share of the adult population attending religious services at least weekly according to the World Values Survey, *vote* is the voter turnout in national elections recorded by IDEA, *h2o* is the share of the population with treated water according to the UN's Aquastat, *food* is the degree of food self-sufficiency in % = (1 – food imports / merchandise exports), and *nrg* = total energy production/consumption, according to the US Energy information Administration (2020). When data on the share of births in and out of wedlock are not available, for such countries *aaai* is used as opposed to *aaaim* omitting *iw*.

The AAAI in effect distinguishes primary from secondary characteristics and indicators by giving proportional weight to the first three variables (which never register a zero value), while weighting the other six variables equally using arithmetic means. This combination is necessary to avoid mathematical anomalies resulting when the value for a variable is zero, since dividing by zero leads to undefined results.

The implicit maximum value of each AAAI variable is in most cases greater than or equal to 1. This would result, for example, if everyone reproduced him- or herself with children, obtained an advanced degree, if every nation maintained positive net monetary reserves, if all citizens voted, participated in civil society and worshiped regularly, and if each nation were self-sufficient in water, food and energy through some combination of domestic production and international trade. In this way, the AAAI aims to be both simple and transparent, while avoiding the sort of contentious claims which other country indices like the HDI presuppose.

OECD + 10 Most Populous Countries, Ranked by Share of World Population, GNI/capita and AAI

Rank	Country	Popu- lation /World	Rank	WB code	GNI/ Capita \$Int	Rank	WB Code	AAAI (NRR)	AAAIM (marital NRR)
1	China	0.1794	1	LUX	\$74,400	1	NOR	0.2856	0.1299
2	India	0.175	2	NOR	\$70,530	2	NGA	0.2417	na
3	United States	0.0422	3	CHE	\$82,180	3	IDN	0.1985	na
4	Indonesia	0.0345	4	IRL	\$67,050	4	AUS	0.1634	0.108
5	Pakistan	0.0286	5	USA	\$63,780	5	BRA	0.1462	na
6	Brazil	0.0271	6	NLD	\$56,890	6	IND	0.1071	na
7	Nigeria	0.0269	7	DNK	\$56,410	7	CAN	0.1024	0.0682
8	Bangladesh	0.0217	8	AUT	\$55,300	8	MEX	0.0992	0.0312
9	Russia	0.0186	9	ISL	\$55,190	9	CHE	0.0978	0.0789
10	Mexico	0.016	10	DEU	\$54,560	10	NZL	0.0957	0.0508
11	Japan	0.0159	11	SWE	\$54,030	11	KOR	0.0953	0.0933
12	Turkey	0.0106	12	BEL	\$51,740	12	RUS	0.0921	na
13	Germany	0.0106	13	AUS	\$50,050	13	BGD	0.0897	na
14	France	0.0086	14	FIN	\$48,580	14	POL	0.0891	0.0793
15	United Kingdom	0.0085	15	CAN	\$47,590	15	NLD	0.0852	0.0455
16	Italy	0.0075	16	FRA	\$46,360	16	TUR	0.0843	0.0818
17	South Korea	0.0066	17	GBR	\$45,350	17	HUN	0.0839	0.0497
18	Spain	0.006	18	JPM	\$45,180	18	ISL	0.0839	0.0497
19	Canada	0.0049	19	KOR	\$40,090	19	SWE	0.0839	0.0373
20	Poland	0.0049	20	ISR	\$39,940	20	CZE	0.0819	0.0691
21	Australia	0.0033	21	ESP	\$39,800	21	DEU	0.0816	0.0526
22	Chile	0.0025	22	NZL	\$39,410	22	ISR	na	0.0724
23	Netherlands	0.0022	23	CZE	\$37,530	23	GRC	0.0786	0.0712
24	Belgium	0.0015	24	SLV	\$37,450	24	CHL	0.0774	0.0211
25	Greece	0.0014	25	EST	\$34,970	25	SVN	0.0773	0.0334
26	Czech Republic	0.0014	26	LTU	\$34,320	26	ITA	0.0764	0.0647
27	Sweden	0.0013	27	SVK	\$33,060	27	FIN	0.0752	0.0448
28	Portugal	0.0013	28	PRT	\$32,680	28	USA	0.0748	0.045
29	Hungary	0.0012	29	POL	\$30,010	29	PAK	0.0742	na
30	Israel	0.0012	30	HUN	\$29,860	30	IRL	0.0725	0.0483
31	Austria	0.0011	31	LTV	\$29,780	31	FRA	0.0704	0.0349

32	Switzerland	0.0011	29	GRC	\$29,670	32	SVK	0.0702	0.0583
33	Denmark	0.0007	30	TUR	\$27,640	33	JPN	0.0636	0.0622
34	Finland	0.0007	31	RUS	\$26,470	34	PRT	0.0625	0.0433
35	Slovakia	0.0007	32	BRA	\$24,450	35	ESP	0.0588	0.0531
36	Norway	0.0007	33	CHL	\$24,190	36	LTU	0.0524	0.0438
37	New Zealand	0.0007	34	MEX	\$19,340	37	EST	0.0521	0.021
38	Ireland	0.0006	35	IDN	\$12,670	38	LVA	0.0372	0.0249
39	Lithuania	0.0004	36	IND	\$7,680	39	CHN	0.0259	na
40	Slovenia	0.0003	37	PAK	\$5,860	Omitted (missing data)/WLD pop.			
41	Latvia	0.0002	38	NGA	\$5,710	0.11%	AUT	na	na
42	Estonia	0.0002	39	BGD	\$4,570	0.14%	BEL	na	na
43	Luxembourg	0.0001	43	BGD	\$4,964	0.07%	DNK	na	na
44	Iceland	0.0001	44	PAK	\$4,898	0.01%	LUX	na	na
-	OECD	0.1664	GDP/WLD	OECD	0.4953	0.85%	GBR	na	na
-	OECD + Top 10*	0.6787	-	OECD + Top 10	0.8078	1.19%	Total	-	-

As mentioned, the AAI has been calculated for the 10 most populous countries plus the 36-member OECD. Since two of the largest 10 are OECD members, this leaves a net total of 44 countries. But five smaller OECD countries (Austria, Belgium, Denmark, Luxembourg and the United Kingdom), comprising just over 1 percent of world population, must be omitted due to missing data series. This leaves 39 countries for which complete data are available. But those 39 countries comprise two-thirds of world population and more than 80 percent of world GDP.

Certainly, many indicators affect the rankings, notably including the degree of energy independence and national differences in voting patterns. (Former communist countries have generally seen a sharp rise in both voting and civic participation since those countries' transitions, though IDEA scores China at zero for democratic voting.) Generally speaking, however, the most populous countries (except for China) rank significantly higher than the OECD countries because of higher fertility rates. For example, Nigeria, Indonesia, Brazil, India and Mexico are 5 of the top 8 in the AAI ranking.

The scholastic moral philosophy relies heavily on the natural law—that is, what can be known by reasoning from common experience, regardless of cultural differences. As such, the AAI might be called a thumbnail summary of human nature according to Western Civilization. Yet the results indicate that the AAI is not Eurocentric, since it can be applied meaningfully also to countries as large and culturally diverse as China, India, the United States, Indonesia, Pakistan, Brazil, Nigeria, and Bangladesh. Thus it is possible to maintain, for example, that China's ranking in last place and the relatively low ranking of the United States, are not due to any cultural bias in the construction of the AAI, but transparent and reasonably objective judgments.



#### 4. COMPARING THE SFI AND AAA INDICES AND DISCUSSION.

Unfortunately, data limitations prevent a complete country-by-country comparison of the SFI and AAAI. The SFI has complete data series for all 36 member countries of the OECD, which comprise about one-sixth of world population and about one-half of world GDP. The AAAI omits five OECD countries due to lack of necessary data series (Austria, Belgium, Denmark, Luxembourg and the United Kingdom, which together comprise just over 1% of world population). But besides 31 of 36 OECD countries, the AAAI is calculated also for 8 of the world's 10 most populous countries, which comprise just over half of world population. As a result, the AAAI comprehends 39 countries, which comprise about 67 percent of world population and about 80 percent of world GDP.<sup>16</sup>

Both indices' indicators are broadly similar in containing (albeit somewhat different) measures of fertility (the NRR in the AAAI and TFR in the SFI), education (share of population with tertiary education in the AAAI and mean years of schooling and parental education in the SFI), religion (weekly worship in the AAAI and self-reported spirituality in the SFI), voting in national elections in both indices, and measures of water, food and energy use (energy imports in the SFI and energy production/consumption in the AAAI).

Because the AAAI contains far fewer variables (9) than the SFI (28), the average weight of each variable, e.g., for fertility, is much lower in the SFI than the AAAI, and differing weights of SFI variables resulted from recommendations by a panel of experts. This method is necessary to avoid mathematical anomalies resulting when the value for a variable is zero, since dividing by zero leads to undefined results.

But the two indices also differ in that the SFI contains measures of market income (GDP per capita, household income and relative child poverty), while the AAAI does not (although two AAAI indicators— population and tertiary education— comprise a good proxy for real GDP in most countries).

While the SFI is calculated for all 36 OECD countries, which comprise about 17 percent of world population, the AAAI covers 39 countries which comprise about 67% of world population, including the ten most populous countries in the world, a difference comprising just over half of world population.

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<sup>16</sup> <https://www.oecd.org/sdd/prices-ppp/oecd-share-in-world-gdp-stable-at-around-50-per-cent-in-ppp-terms-in-2017.htm>

Table 1

SFI and AAI Structures & Indicators Compared

1A. Social Futuring Index (SFI):

Normative Standards, Dimensions, & Indicators

- I. Peace and security
  - A. Defense and Safety
    - 1. Political stability and absence of violence or terrorism
    - 2. Robbery
    - 3. Military expenditure
  - B. Assets
    - 4. Ecological balance
    - 5. Arable land
    - 6. Net energy imports
    - 7. Renewable water resources
  - C. Functionality
    - 8. High-technology exports
    - 9. Road density (per capita)
    - 10. Households with broadband internet connection
- II. Attachment
  - D. Patriotism
    - 11. Persons living abroad
    - 12. Registered voters who actually voted
  - E. Family
    - 13. Employees working very long hours – work/life balance
    - 14. Value of family benefits
    - 15. Single person households
  - F. Spirituality
    - 16. Important to follow traditions and customs
    - 17. Self-reported religiosity
- III. Care
  - G. Self-reliance
    - 18. Mean years of schooling
    - 19. Unemployment rate
    - 20. Life expectancy (mix) (based on current value and previous change)
  - H. Material advancement
    - 21. Household's expenditure
    - 22. Child relative income poverty rate
    - 23. GDP/capita (mix) (based on current value and previous change)
- IV. Balance
  - I. Wellbeing and Generativity
    - 24. Transition of educational attainment level from parents to current adults
    - 25. Fertility (mix) (based on current value and previous change)
    - 26. Age dependency

- 27. Anti-depressant usage
- 28. Gini coefficient (income)

1B. AAA Index (AAAI)

Human Quality	Social Unit	Indicator
1. Rational	1. Individual	1 Adult tertiary education, % ( <i>ter</i> )
2. Domestic	2. Marriage	2. Marital net reproduction rate ( $mnrr=nrr*iw$ [ <i>in wedlock</i> ])
	3. Business	3. (1 + net monetary reserves/GNI) ( <i>netrespct</i> )
	4. Non-profit	4. Civil society participation rate, % ( <i>civi</i> )
3. Political	5. Government	5. Voter turnout in national elections, % ( <i>vote</i> )
4. Religious	6. Church	6. Rate of weekly worship ( <i>ww</i> )
5. Animal	7. Individual	7. Population with improved water % ( <i>h2o</i> )
		8. Food security % = [1-food imports / mdse exports] ( <i>food</i> )
		9. Energy production/consumption % ( <i>nrg</i> )

When comparing only the OECD countries, the top three countries are the same in both indices but in different order: Canada, Australia and Norway in the SFI and Norway, Australia and Canada in the AAAI. Despite their similarities, because of different choices of variables and weighting, the two indices lead to some significant differences in country ranking, Perhaps the most striking single difference concerns Mexico, which ranks last (36<sup>th</sup>) in the SFI but 8<sup>th</sup> in the AAAI ranking among the OECD countries. However, both indices are similar in ranking the USA, which is 22<sup>nd</sup> in both indices.

OECD Countries Only Ranked by the SFI and AAAI						
Rank	WBcode	SFI	Rank	WBcode	AAAI (based on NRR)	AAAIM (based on marital NRR)
1	CAN	70.01	1	NOR	0.2856	0.1299
2	AUS	62.74	2	AUS	0.1634	0.1080
3	NOR	61.28	3	CAN	0.1024	0.0682
4	ISL	59.61	4	MEX	0.0992	0.0312
5	DNK	54.93	5	CHE	0.0978	0.0789
6	FIN	53.97	6	NZL	0.0957	0.0508
7	EST	53.41	7	KOR	0.0953	0.0933
8	POL	52.56	8	POL	0.0891	0.0793
9	HUN	52.55	9	NLD	0.0852	0.0455
10	SWE	52.05	10	TUR	0.0843	0.0818
11	SVK	51.99	11	HUN	0.0839	0.0497
12	NZL	51.98	12	ISL	0.0839	0.0497
13	AUT	51.27	13	SWE	0.0839	0.0373
14	LTU	51.01	14	CZE	0.0819	0.0691
15	SVN	50.68	15	DEU	0.0816	0.0526
16	LVA	50.01	16	ISR	na	0.0724

17	NLD	50.00	17	GRC	0.0786	0.0712
18	DEU	49.91	18	CHL	0.0774	0.0211
19	IRL	49.14	19	SVN	0.0773	0.0334
20	CHE	48.74	20	ITA	0.0764	0.0647
21	CZE	47.31	21	FIN	0.0752	0.0448
22	USA	46.84	22	USA	0.0748	0.0450
23	LUX	46.44	23	IRL	0.0725	0.0483
24	ISR	44.68	24	FRA	0.0704	0.0349
25	GBR	43.64	25	SVK	0.0702	0.0583
26	BEL	43.54	26	JPN	0.0636	0.0622
27	CHL	43.23	27	PRT	0.0625	0.0433
28	GRC	42.81	28	ESP	0.0588	0.0531
29	FRA	41.65	29	LTU	0.0524	0.0438
30	KOR	41.10	30	EST	0.0521	0.0210
31	ITA	40.77	31	LVA	0.0372	0.0249
32	TUR	40.71	-	AUT	na	na
33	ESP	39.80	-	BEL	na	na
34	PRT	38.54	-	DNK	na	na
35	JPN	38.13	-	LUX	na	na
36	MEX	35.63	-	GBR	na	na

## 5. CONCLUSION.

The SFI and AAI represent two systematic exercises in SF, one oriented by modern social science (the SFI) and one (the AAI) by applying scholastic moral philosophy and economics to nations in the 21<sup>st</sup> century.

The SFI is notable for the much greater detail of its fixed normative, analytical and discursive framework, the center of which is “a good life in a unity of order”. The SFI also places much greater emphasis on several more modern indicators like market income, broadband access, high-technology exports, anti-depressant usage, road density, crime, unemployment, social benefits and relative income distribution.

The AAI is much simpler in structure and focused on a handful of human traits, and with about one-third as many variables and a different method of weighting, tends to weigh both tangible and intangible form of so-called “human capital” more heavily than the SFI.

Despite these differences, both the modern and ancient approaches lead to broadly similar conclusions about the nations comprising the OECD, though sometimes divergent conclusions about countries developing primarily because of their investment in tangible and intangible so-called “human capital.”

More research is necessary to broaden the share of world population described by both approaches.

But the fact that both the SFI and AAI rank the USA in the third and the AAI ranks China in the fourth quartile, respectively, indicates that the countries with the two largest economies in the world face some serious challenges in coming decades according to two different but internally consistent methods of Social Futuring, ancient and modern.

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