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Social progress around the world: trends and convergence

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Abstract

This paper assesses social progress in 139 countries over the period 1995–2017 following the framework proposed by the Social Progress Imperative; a notable contribution is a composite index allowing for comparisons across countries and over time. The index considers 45 raw indicators covering three fundamental pillars of social progress: basic human needs, foundations of well-being, and opportunities. The results point to a marked improvement in social progress all over the world from the mid-1990s, although they also depict a highly polarized world. Cross-country convergence patterns are also investigated, revealing a reduction in the differences in social progress, largely driven by the narrowing of the gap in basic human needs. Conversely, sizeable cross-country disparities remain in foundations of well-being and opportunities.

JEL classifications: C43, F63, O11, O15

1. Introduction

The limitations of Gross Domestic Product per capita (GDPpc) as an indicator of social progress have been widely recognized (see Stiglitz *et al.*, 2009; Rojas and García-Vega, 2017). Indeed, a focus on income alone may distract policymakers from other important drivers of well-being (Rojas, 2020). International organizations such as the OECD and the World Bank acknowledge that underdevelopment is about more than just income; it concerns social vulnerability and exclusion, poor government institutions and violence, among other factors. Accordingly, since the 1970s more than 80 measures of societies' development have been proposed (Barrington-Leigh and Escande, 2018), e.g. the United Nations' Human Development Index (HDI) or the OECD Better Life Index (BLI), giving rise to several papers providing rankings of countries (e.g. Peiró-Palomino and Picazo-Tadeo, 2018).

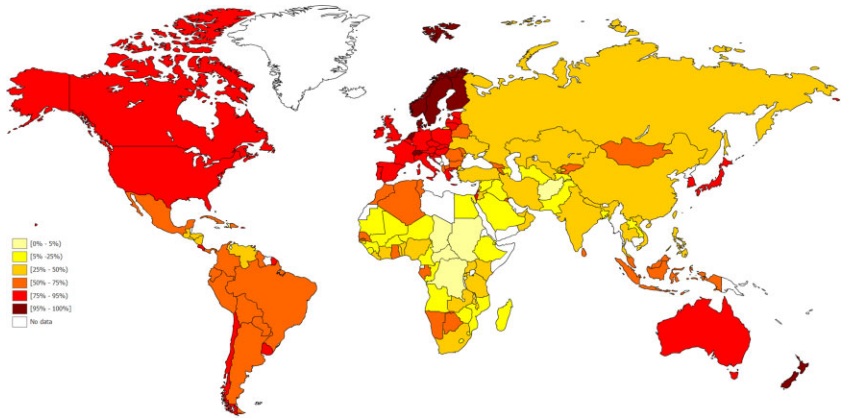

Fig. 1. SPI in 2017.

This paper builds on the Social Progress Index (SPI) delivered by the non-profit organization Social Progress Imperative,[1] which is a comprehensive measure of development grounded on three non-economic pillars: basic human needs, foundations of well-being, and opportunities. In turn, each pillar is made up of different components represented by an extensive list of indicators. A beta test of the SPI was launched in April 2013 for debate and empirical examination (Porter *et al.*, 2013), whereas the first full edition was published in 2014 (Porter *et al.*, 2014); since then, the index has been released annually. Using this framework, Fehder *et al.* (2018) found a positive relationship between social progress and subjective well-being; Fehder *et al.* (2019) focused on the importance of economic institutions for social progress; and, more recently, Pritchett (2022) concluded that economic growth is strongly related to social progress, particularly in low income countries.

Despite the advances in recent years, there are still important gaps in the literature on social progress measurement. For example, it is often unfeasible to compare social progress over time due to heterogeneity in the composition of the indexes in different releases; besides, changes in the sample modify the relative positions of the countries, making long-run analyses difficult. Another shortcoming is the limited geographical coverage of most studies. It is no surprise then that, unlike convergence in income, convergence in social progress across a wide range of countries remains largely unexplored.

The paper makes two contributions. First, departing from the 2014 edition of the SPI, several enhancements are incorporated to expand both its geographical and temporal coverage, enabling the development of a composite index for 139 countries over the period 1995–2017. All the construction steps follow Porter *et al.* (2014) as closely as possible in terms of variables and methodology. However, some modifications were necessary to make the index comparable both across countries and over time. Second, the paper evaluates β-convergence with dynamic panel regressions as in Islam (1995) and σ-convergence following the novel approach by Kong *et al.* (2019).

The computed SPI reveals huge disparities worldwide (see Fig. 1). In 2017, the Nordic countries, Switzerland, Netherlands and New Zealand take the lead. Western European countries, the USA, Canada, and Australia also show remarkably high levels of social progress.

1 https://www.socialprogress.org

Intermediate levels are seen in South American countries, together with some MENA and South Asian countries. Most of the Caribbean countries register similar values to the Asian giants, including India and China, all with relatively low scores. Finally, the lowest levels of social progress are found in sub-Saharan African and some Middle Eastern countries.

The results also indicate that social progress has improved virtually everywhere over the 23-year period analysed, and particularly in highly populated countries. However, a marked polarization between advanced and laggard countries is found. Moreover, disparities in social progress narrowed, mainly due to the strong convergence observed in the basic human needs pillar; conversely, disparities persist in the foundations of well-being and opportunities pillars. Social progress is also positively correlated with GDPpc, although these two indicators are certainly not substitutes.

The remainder of this paper is structured as follows. Section 2 introduces the measure of social progress. Section 3 analyses the trends and distribution of social progress. In Section 4, a convergence analysis is carried out, while Section 5 briefly compares GDPpc and social progress. Finally, Section 6 concludes.

2. Measuring social progress

Composite indexes are useful tools that aggregate into a single figure the information gathered on multidimensional realities. According to the OECD (2008, pp. 15–16), the main steps involved in building a composite index are: (i) setting a theoretical framework; (ii) selecting the raw indicators; (iii) imputing missing data; (iv) standardizing the data in order to produce comparable figures; (v) selecting the weightings to aggregate the indicators; and finally, (vi) analyzing its robustness. Following these guidelines, this research takes the framework provided by Porter *et al.* (2014) as a starting point and extends both the geographical and temporal span of the index.[2] As a result, a SPI is constructed for 139 countries and a 23-year period. The index primarily relies on a selection of 45 indicators, with the raw database containing 3,197 observations and 143,865 data points. The same indicators included in the baseline SPI are used whenever possible, whereas appropriate alternatives were sought when information was not available. The ultimate goal is to maintain a reasonable balance between sticking to the original index and maximizing coverage without impairing its quality and comparability.

2.1 Theoretical framework and selection of indicators

Setting a framework for the measurement of social progress using a composite index poses major theoretical and empirical challenges. One issue is that 'social progress' is a broad concept that has no single definition (see, for detailed discussions, Streeten, 2013; O'Sullivan, 2014). Furthermore, most of the interpretations of social progress are easily understood but difficult to measure, as measurement involves value judgments and ultimately entails a normative basis.[3] Porter *et al.* (2014) defines social progress as 'the capacity

2 The 2014 release of the SPI included 54 raw indicators and 132 countries. Subsequent editions have improved the way indicators are measured and expanded the number of countries. The latest 2021 release maintains the original framework and includes 53 indicators and 168 countries; besides, it provides comparable data for the period 2011–2020.

3 Note that 'progress' implies an idea of movement toward a desired goal or end; therefore, getting closer to that goal can be judged as an improvement. Measuring the evolution toward such a goal entails specific value judgments about the common good, social welfare, and well-being.

of a society to meet the basic human needs of its citizens, establish the building blocks that allow citizens and communities to enhance and sustain the quality of their lives, and create the conditions for all individuals to reach their full potential'.[4] It alludes to three 'pillars' of social progress; namely, (I) basic human needs; (II) foundations of well-being; and (III) opportunities. These pillars are made up of components, which draw on a wide array of outcome-oriented raw indicators.[5]

Most of the normative judgments guiding the selection of indicators and the construction of the SPI are related to Natural Rights theory (Locke, 1689; Rousseau, 1762). As such, they aspire to be universal and refer to inalienable rights that are not dependent on any particular culture. However, the concept of 'social progress' embodied in the SPI also reflects to some extent happiness-based or utilitarian value judgments, a Rawlsian view of justice, or the liberal principle of equality of opportunity, among others (O'Sullivan, 2014).[6] The following paragraphs describe the architecture of the SPI built in this research (pillars and components) and its theoretical foundations. Table 1 lists all raw indicators, measurement units, data sources, polarity, and the share of missing data. Indicators different to those included in the original SPI are also identified. Countries included in the sample are in Table A1 of the Online Appendix provided in the Supplementary Material.

2.1.1. (I) Basic human needs The inspiration behind the concept of basic human needs is the moral and political philosophy of Natural Rights theory enunciated by John Locke and Jean-Jacques Rousseau, which is also embodied in constitutions worldwide and in the United Nations' Declaration of Human Rights. Natural Rights theory holds that certain rights should be respected as absolute, except where exercising them may infringe on others' rights. The most basic one is to live to maturity, which implies living in security, shelter, with sufficient water, food, and medical care. This pillar is measured by the following components:

(I.1) Nutrition and basic medical care. It represents two key prerequisites for both survival and preventing early-life damage that may lead to permanent impairment (Nisbett *et al.*, 2014). A poor diet and lack of access to medical care increase the chances of malnutrition and death caused by treatable infectious diseases (United Nations, 2019a).

4 This definition captures the essence of other well-known programs such as the United Nations' Sustainable Development Goals (https://sdgs.un.org/goals).

5 The use of an extensive range of indicators has the advantage of making the index less vulnerable to serious distortions if any indicator is inappropriate. Furthermore, all indicators in the SPI measure outcomes that matter to the lives of people, instead of spending or efforts believed to lead to social progress (Porter *et al.*, 2014, p. 24). This means that the index is outcome-oriented, which is highly appropriate for the purpose of assessing social progress (Fleurbaey and Blanchet, 2013). There are at least two reasons for this. On the one hand, building input-oriented composite indexes requires a degree of consensus about how inputs lead to outcomes, which is an ongoing debate in the field of social progress. On the other hand, a key feature of the SPI is that economic indicators are intentionally excluded and most inputs of social progress are measured in monetary terms; e.g. investing in education would increase average years of schooling, which can reasonably be regarded as an outcome of social progress.

6 The diverse normative and moral basis can be seen as a strong point of the SPI. However, there might be other paradigms of social progress or aspects that the SPI does not take into account. While this is a potential limitation of the SPI, addressing these issues is far beyond the scope and objectives of this research.

Table 1. The architecture of the SPI

Pillar	Component	#	Indicator (unit of measurement and indexes' original source when needed)	Source	Polarity	Observations	Missing (%)
(I) Basic human needs	(I.1) Nutrition and basic medical care	1	Undernourishment (% population)	WDI	Negative	2,382	25.49
		2	Depth of food deficit (kilocalories per person/day)	WDI	Negative	3,019	5.57
		3	Maternal mortality rate (per 100,000 live births)	WDI	Negative	2,502	21.74
		4	Child mortality rate (per 100,000 live births)	WDI	Negative	3,197	0.00
		5	Death from infectious diseases (per 100,000 people)	GBD	Negative	3,197	0.00
	(I.2) Access to clean water, sanitation, and shelter	6	People using at least basic drinking water services* (% population)	WDI	Positive	2,502	21.74
		7	Access to electricity (% population)	WDI	Positive	2,903	9.20
		8	People using at least basic sanitation services* (% population)	WDI	Positive	2,488	22.18
		9	People practicing open defecation* (% population)	WDI	Negative	2,465	22.90
		10	Access to clean fuels and technologies for cooking* (% population)	WDI	Positive	2,468	22.80
	(I.3) Personal safety	11	Homicide rate (per 100,000 people)	GBD	Negative	3,197	0.00
		12	Traffic deaths (per 100,000 people)	GBD	Negative	3,197	0.00
		13	Physical violence* (index; Coppedge *et al.*, 2019, 2020)	VDEM	Positive	3,197	0.00
		14	Political stability and absence of terrorism* (index; Kaufmann *et al.*, 2010)	WGI	Positive	2,641	17.39

(continued)

Table 1. Continued

Pillar	Component	#	Indicator (unit of measurement and indexes' original source when needed)	Source	Polarity	Observations	Missing (%)
(II) Foundations of well-being	(II.1) Access to basic knowledge	15	Adult literacy rate (% adult population)	WB, CNTS	Positive	2,783	12.95
		16	Gender parity in secondary enrolment (index)	WDI	Negative	2,701	15.51
		17	Access to basic education* (index; Coppedge *et al.*, 2019, 2020)	VDEM	Positive	3,197	0.00
	(II.2) Access to information and communications	18	Mobile telephone subscriptions (per 100 people)	WDI	Positive	3,193	0.16
		19	Internet users (% population)	WDI	Positive	3,109	2.75
		20	Media corruption* (index)	VDEM	Positive	3,197	0.00
		21	Government censorship effort-media* (index; Coppedge *et al.*, 2019, 2020)	VDEM	Positive	3,197	0.00
	(II.3) Health and wellness	22	Life expectancy (years)	WDI	Positive	3,197	0.00
		23	Health equality* (index)	VDEM	Positive	3,197	0.00
	(II.4) Environmental quality	24	CO_2 emissions* (metric tons per capita)	WDI	Negative	2,780	13.04
		25	Renewable energy consumption* (% of total energy consumption)	WDI	Positive	2,914	8.85
		26	Forest conservation* (index; Wendling *et al.*, 2018)	WDI	Positive	3,058	4.35
		27	Terrestrial biome protection* (index; Wendling *et al.*, 2018)	EPI	Positive	3,197	0.00
		28	Species protection* (index; Wendling *et al.*, 2018)	EPI	Positive	3,197	0.00

(continued)

Table 1. Continued

Pillar	Component	#	Indicator (unit of measurement and indexes' original source when needed)	Source	Polarity	Observations	Missing (%)
(III) Opportunities	(III.1) Personal rights	29	Political rights (index)	FH	Negative	3,158	1.22
		30	Freedom of speech (index)	VDEM	Positive	3,197	0.00
		31	Freedom of religion (index)	VDEM	Positive	3,197	0.00
		32	Access to justice* (index)	VDEM	Positive	3,197	0.00
		33	Property rights for women* (index)	VDEM	Positive	3,197	0.00
	(III.2) Personal freedom and choice	34	Freedom of foreign movement* (index)	VDEM	Positive	3,197	0.00
		35	Freedom from slave work* (index)	VDEM	Positive	3,197	0.00
		36	Political corruption* (index)	VDEM	Negative	3,197	0.00
		37	Public sector corruption (index)	VDEM	Negative	3,197	0.00
		38	Women empowerment* (index; Sundström *et al.*, 2017)	VDEM	Positive	3,197	0.00
	(III.3) Tolerance and inclusion	39	Equality of political power by gender* (index)	VDEM	Positive	3,197	0.00
		40	Equality of political power by socioeconomic position* (index)	VDEM	Positive	3,197	0.00
		41	Equality of political power by social group* (index)	VDEM	Positive	3,197	0.00
	(III.4) Access to advanced education	42	Average years of education* (years)	GBD	Positive	2,919	8.70
		43	University students* (per 1,000 people)	CNTS	Positive	2,759	13.70
		44	School enrolment, tertiary* (% of population in the age group)	WDI	Positive	2,385	25.40
		45	Scientific production* (scientific citable documents per 1,000 people)	Scimago	Positive	3,168	0.91

Notes: The polarity is determined according to how each indicator is defined in the original source, without considering whether the concept itself is positive or negative for social progress. Indicators different to those included in the original SPI (see Appendix 3 in Porter *et al.*, 2014) are marked with an asterisk.
Source: WDI: World Development Indicators, GBD: Global Burden of Disease, VDEM: Varieties of Democracy, WGI: World Governance Indicators, EPI: Environmental Performance Index, FH: Freedom House, CNTS: Cross National Time Series Data Archive, and Scimago: SCImago Journal and Country Ranks.

(I.2) Access to clean water, sanitation, and shelter. Clean water is crucial for drinking and cooking, and must be pathogen-free to prevent the spread of disease (Cutler and Miller, 2005). Similarly, sanitation prevents the spread of disease and is an aspect of human dignity that can affect multiple facets of a person's life (Fewtrell *et al.*, 2005). Besides, adequate shelter conditions are essential to ensuring safety, health, and human dignity by providing protection from the elements and basic facilities.

(I.3) Personal safety. Safety is crucial for the attainment of health, peace, justice, and acceptable living conditions. Populations severely affected by violence and war usually suffer from an excess of infant mortality, destroyed health infrastructure, and eroded agricultural systems and living conditions (Gates *et al.*, 2012).

2.1.2 (II) Foundations of well-being Foundations of well-being highlight the extent to which people can access basic education, obtain information and communicate freely, benefit from a modern healthcare system, and live in a healthy environment. These elements are essential for people to fulfil their potential, as they serve as the basis for the exercise of freedom of thought and the ability to follow one's conscience, a fundamental right included in many declarations of rights. This is linked to the first Rawlsian principle of justice and political liberalism, which claims that the state is responsible for ensuring all citizens have these rights available. They are also related to Natural Law, which holds that human spiritual well-being can be achieved through a life lived in harmony with nature. This pillar is formed by the following components:

(II.1) Access to basic knowledge. As shown by Samarakoon and Parinduri (2015), education is fundamental to individual freedom and empowerment and can lead to increased satisfaction (Hossain *et al.*, 2019). Basic knowledge in reading, writing, and math can improve individual social and economic circumstances, as well as increase social and political participation (Henderson and Chatfield, 2011).

(II.2) Access to information and communications. It measures the degree of freedom to access and exchange information, which is essential for an efficient, open, and accountable society (Besley and Prat, 2006; Costas-Pérez *et al.*, 2012). The ability of an individual to connect with others facilitates learning and the exchange of ideas, and strengthens the social fabric. In addition, the widespread use of communication technologies favors transparency and can lead to democratizing waves curtailing the potential for corruption and tyranny (Ferraz and Finan, 2008; Lotan *et al.*, 2011).

(II.3) Health and wellness. This component measures the capacity to live a long and healthy life, which is an indicator of societal well-being and success (Eurostat, 2017). At a collective level, poor health hinders social development by reducing the human capital available within society (OECD, 2019). In addition, it is important to measure the extent to which high-quality basic healthcare is guaranteed to all citizens and if it is sufficient to enable them to exercise their basic political rights as adult citizens (Sigman and Lindberg, 2019).

(II.4) Environmental quality. A safe and protected natural environment is a precondition for living a healthy and satisfying life and enables longer-term community resilience (Hoek *et al.*, 2001). It is tied to both health and survival: outdoor pollution can affect people's capacity to breathe freely, while greenhouse gas emissions and loss of biodiversity and habitat threaten the world's collective climate conditions, food chain, and disease containment (Keesing *et al.*, 2010).

2.1.3 (III) Opportunities This pillar refers to the extent to which individuals enjoy the conditions that will allow them to achieve their full potential in a society. The underlying theoretical arguments are largely based on Natural Rights theory. Freedom of thought and life choices is guaranteed explicitly in major modern declarations of rights. They are also a direct implication of the norms of liberal political philosophy and the moral imperative of equality of opportunities for all people, that informs both socialist and liberal political thought. These ideas derive from Natural Law and are built on the concept of natural justice; from socialist thinking of all stripes, where it is perhaps the central value judgment; and from the 20th century moral philosophy of justice of John Rawls. Equality of opportunity is a key element in the liberalism of John Stuart Mill and in a wide variety of moral philosophies. This pillar is measured by the following components:

(III.1) Personal rights. These include political and property rights, as well as rights of association and expression. They capture whether an individual is able to participate freely in society and they are included in all the contemporary declarations of human rights (O'Sullivan, 2014). They all contribute to human dignity and worth, and facilitate the participation of individuals in building a free and democratic society, where the people have a voice in determining state and community affairs (Beetham, 2004).

(III.2) Personal freedom and choice. It focuses on individual freedom over life decisions, which matters for life satisfaction (Verme, 2009; Delhey, 2010). This component also includes corruption, which distorts individuals' choices, creating insecurity and uncertainty in social relationships (Bhattacharyya and Hodler, 2015).

(III.3) Tolerance and inclusion. In a tolerant and inclusive society, every individual can pursue his/her human right to a life of dignity and worth. Regardless of the reason, discrimination prevents people from fully participating in society, creating a pretext for violence and social conflict (Montalvo and Reynal-Querol, 2005).

(III.4) Access to advanced education. Even though not every individual will choose to pursue advanced education, the choice in itself is fundamental to advancing both societal enlightenment and individual opportunity (Pinker, 2018). As shown by Iaria *et al.* (2018), access to top research is key for scientific and technological progress.

2.2 Treatment of missing data

Missing values for raw indicators may be due to: (i) lack of coverage by the data source or (ii) incomplete reporting by the country to international organizations. A large amount of missing values can severely affect the statistical quality of the SPI. The total share of missing data in the sample is 6.14% (see Table 1 for detailed information). It should be noted that this research requires a balanced panel.

Missing data are interpolated using a penalized cubic smoothing spline, a flexible tool that produces much lower errors than conventional regression splines (Aguilera and Aguilera-Morillo, 2013). In doing so, it has been assumed that the time series of each raw indicator k for each country i can be represented by means of a smooth function f of a time trend, such that:

$$y_{it}^{k} = f(t) + \varepsilon_{it}, \tag{1}$$

where ε_{it} is a random error. Cubic smoothing splines can be used to estimate f by minimizing:

$$E_\lambda = \sum_t^T (y_{it} - f(t))^2 + \lambda \int \left(f(t)''\right)^2 dt, \tag{2}$$

where λ controls the variance–bias trade-off between data fitting and smoothness of f; the term $(y_{it} - f(t))^2$ is a mean-squared error which pushes the spline as close as possible to the data points; and the second term acts as a wiggliness penalty that attempts to keep the spline as free of curvature as possible.[7]

The general solution of $\hat{f}$ for the problem in Equation (2) is given by Wood (2003).[8] With the estimate of $\hat{f}(t)$, the fitted time-series $\hat{y}_{it}$ replaces the missing data points. This procedure makes it possible to consistently fill in 92.8% of the missing values in the sample, reducing the need for regression imputation to just 0.44% of the 143,865 data points employed in the analysis.[9]

2.3 Standardization

In order to convert all indicators y_{it}^k, measured in different units, into a common scale, a two-step procedure has been followed. First, the indicators that exhibit a negative relationship with social progress have been multiplied by -1 to invert their polarity and ensure that higher values always represent better performance.[10] Second, the data have been standardized into z-scores to ensure comparability. To account for both cross-sectional and temporal dimensions of the dataset, the means and standard deviations required for standardization have been computed using the 3,197 observations available for each indicator (139 countries and 23 years). Formally,

$$z_{it}^{(k)} = \frac{y_{i,t}^{+,k} - \overline{y}^k}{\sigma_{y,k}}, \tag{3}$$

where $z_{it}^{(k)}$ denotes the z-score for the kth indicator in country i and time t; $y_{i,t}^{+,k}$ is the original value of the indicator k for country i and period t after being transformed, if necessary, to have a positive polarity; $\overline{y}^k$ denotes the sample mean for indicator k across countries and years; and $\sigma_{y,k}$ stands for its standard deviation.

2.4 Selection of weights and aggregation

Aggregation was done using principal components analysis (PCA) as in Porter *et al.* (2014); further details are in Stern *et al.* (2018, pp. 13–14). This technique aggregates the set of

7 Note that as λ goes to infinity the smoothing spline approaches a linear least squares fit, whereas when λ goes to 0, f becomes an interpolating spline.

8 The default configuration of the *gam* function of the *mgcv* R software package is used, which automatically selects λ using a cross-validation criterion and avoids knot placement issues.

9 In a few exceptional cases, the whole time series of a given raw indicator y_{it}^k is missing for a given country. In such cases, natural cubic smoothing splines cannot be applied and, therefore, regression imputation is used instead, following Stern *et al.* (2018). In a first step, the link between the indicator y_{it}^k and the set of indicators in component c other than k is estimated for the sample of countries, excluding i that belong to that specific component (i.e. a regression of the form $y_{-i,t}^k = \sum_{\neq k} y_{-i,t}^{\neq k} \beta_{\neq k} + u_{-i,t}$ for all $-i \neq i$ is run). In a second step, the fitted $\hat{\beta}_{\neq k}$ and the data on $y_{i,t}^{\neq k}$ are used to produce $\hat{y}_{i,t}^k$.

10 The polarity is determined according to how each indicator is defined in the original source, without considering whether the concept itself is positive or negative for social progress.

Table 2. KMO tests of sample adequacy

Pillar and components	KMO score
I. Basic human needs	
I1. Nutrition and basic medical care	0.794
I2. Access to clean water, sanitation, and shelter	0.880
I3. Personal safety	0.543
II. Foundations of well-being	
II1. Access to basic knowledge	0.613
II2. Access to information and communications	0.564
II3. Health and wellness	0.500
II4. Environmental quality	0.529
III. Opportunities	
III1. Personal rights	0.864
III2. Personal freedom and choice	0.762
III3. Tolerance and inclusion	0.710
III4. Access to advanced education	0.553

Source: Authors' calculations.

indicators within each component into a single factor that captures the maximum amount of variance in the data while reducing redundancy between indicators (see OECD, 2008; Rencher and Christensen, 2012).

Let Z^c be the $NT \times K$ matrix of standardized indicators after stacking observations $Z^c = \left(z_{it}^{(1)}, \ldots, z_{it}^{(K)}\right)$, forming a given component c of the SPI. The first principal component of the indicators in Z^c is obtained as their linear combination with the highest variance such that

$$P_{1,it}^c = Z_{it}^c \nu_1 = \nu_{1,1} z_{it}^{(1)} + \cdots + \nu_{1,K} z_{it}^{(K)}. \tag{4}$$

The loadings $\nu_{1,k}$ in this context can be understood as the weight that each indicator k contributes to the component P^c. In order to ensure the validity of the dimensionality reduction, and prior to calculating these principal components, the sampling adequacy has been assessed with the Kaiser–Meyer–Olkin (KMO) test, which provides a measure of the proportion of variance among indicators that might be common variance. The KMO statistics for all 11 components of the SPI are shown in Table 2. In all cases, this score is above the critical value of 0.5 (Kaiser, 1974), indicating that the selected indicators are an acceptable measure of the underlying construct represented by the components.

Once each principal component $P_{1,it}^c$ has been estimated for $c = 1, \ldots, 11$, these are transformed into a scale of 0–1 using the following min–max formula:

$$y_{it}^c = \frac{P_{1,it}^c - \min P^c}{\max P^c - \min P^c} \tag{5}$$

where y_{it}^c stands for the normalized component c; $P_{1,it}^c$ is the value for the unnormalized principal component c estimated for country i at period t; $\min P^c$ and $\max P^c$ denote, respectively, the minimum and maximum values of the unnormalized estimated component across all countries and years, thus allowing for both cross-country and cross-year comparability (see Koronakos *et al.*, 2020).

Finally, as in Porter *et al.* (2014), the scores for the three pillars of the SPI are the arithmetic average of their components (equal weightings (EWs), $y_{it}^{p} = \sum_{c=1}^{C} \frac{1}{C} y_{it}^{c}$) and the SPI is the arithmetic average of the pillars. The indexes range between 0 and 1 so that the higher the score, the greater the social progress. This procedure is labeled PCA-EW. Scores of the SPI and its pillars in 1995 and 2017 for all 139 countries in the sample are provided in Table A1 of the Online Appendix.[11]

2.5 Robustness checks

To assess the robustness of the SPI to the aggregation method, the index was recalculated using some alternatives to the baseline PCA-EW approach and the results were used in the empirical analysis carried out in the following sections. Alternative approaches include factor analysis (FA) in all stages of the aggregation process (components, pillars, and SPI) and EW, also in all aggregation stages.[12] The Spearman rank correlations of these indexes and the PCA-EW range from 0.953 to 0.998 (see Table A2 in the Online Appendix). The reason for such strong associations is the high correlation across raw indicators, which mitigates the effect of weights on the aggregate index (Decancq and Lugo, 2013).[13]

3. Evolution and distribution of social progress

3.1 General trends

Descriptive statistics for the SPI and its pillars for 1995 and 2017 are provided in Table 3. The basic human needs pillar scores the highest, followed by foundations of well-being and opportunities. In this regard, it is likely that only after basic necessities have been reasonably met can the focus shift to foundations of well-being and then opportunities; however, this does not necessarily mean that societies cannot work to improve all three pillars of social progress simultaneously.

The evolution of social progress from 1995 to 2017 is depicted in the three panels of Fig. 2. Panel (a) displays a positive trend in social progress over the period, with the pillar of basic human needs showing the highest level and a more sustained trend. Foundations of well-being started out from a lower score but improved remarkably between 2000 and 2012, at which point this growth slowed. Lastly, opportunities slightly improved up until 2011 and then stagnated and even moderately declined. As a result, social progress rose at a slower pace in the last years of the period.

Panel (b) describes the evolution of the SPI for World Bank's geographical classification. The highest levels of social progress are found in North America, followed by Europe and Central Asia. Somewhat below are East Asia and Pacific countries, with similar scores and evolution as in Latin American and Caribbean countries. At the bottom of the ranking are the MENA, South Asian, and sub-Saharan African countries, which display the lowest

11 Results for the whole period are provided in the Supplementary Material.

12 The results for the SPI and its pillars from these alternative composite indexes are not provided in the paper, but are available to readers in the Supplementary Material.

13 As correctly noted by a referee, including further raw indicators uncorrelated with the selected ones could change the results. However, the purpose of this research is to replicate as closely as possible the original SPI framework provided by Porter *et al.* (2014) and extend its temporal and geographic span.

Table 3. The SPI and its pillars, descriptive statistics

	SPI		Basic human needs		Foundations of well-being		Opportunities	
	1995	2017	1995	2017	1995	2017	1995	2017
Minimum	0.186	0.340	0.193	0.322	0.225	0.406	0.068	0.155
1st quartile	0.458	0.553	0.541	0.676	0.448	0.569	0.337	0.396
Median	0.567	0.665	0.753	0.850	0.529	0.654	0.453	0.511
Mean	0.572	0.668	0.705	0.807	0.538	0.665	0.474	0.532
3rd quartile	0.714	0.792	0.891	0.935	0.638	0.751	0.632	0.680
Maximum	0.850	0.920	0.990	0.994	0.747	0.879	0.828	0.908
Standard deviation	0.160	0.142	0.219	0.150	0.120	0.122	0.185	0.190
Coefficient of variation	0.279	0.213	0.311	0.185	0.222	0.184	0.390	0.357
Kurtosis	−0.827	−0.898	−0.779	−0.171	−0.800	−0.865	−0.785	−0.870
Asymmetry coefficient	0.036	0.021	−0.546	−0.778	0.026	−0.024	0.126	0.097

Source: Authors' calculations.

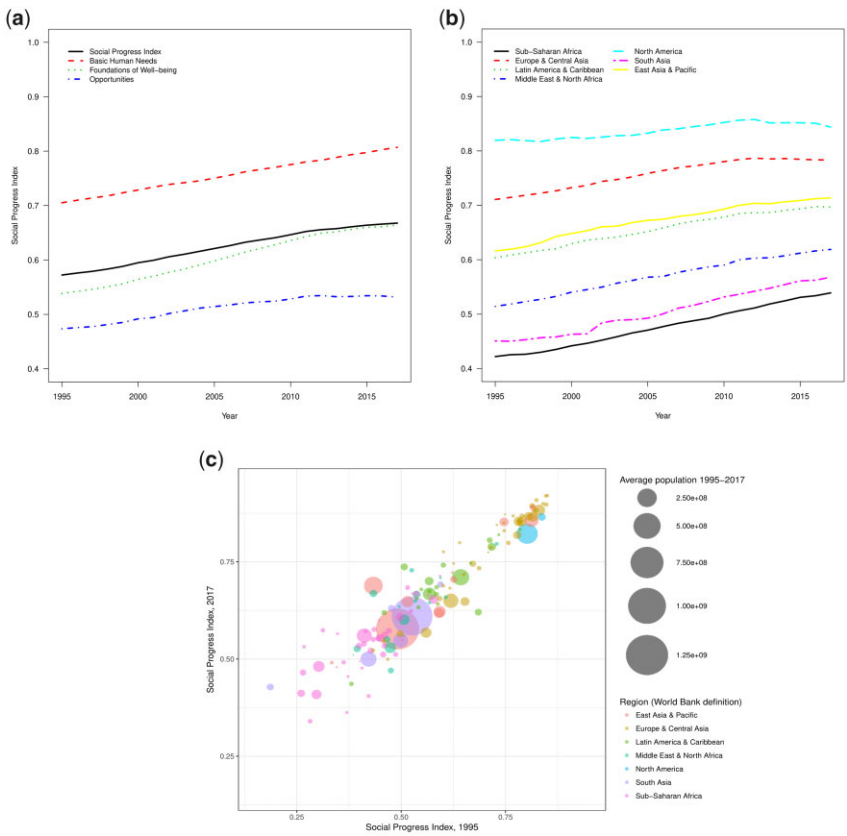

Fig. 2. Evolution of social progress, 1995–2017. (a) Social progress and its pillars. (b) Social progress by country groups. (c) Social progress, 1995 versus 2017.

scores. Whereas differences are still large in 2017, the gap seems to be closing as a result of the comparatively faster growth of the lowest ranked groups.

Panel (c) displays a scatter plot for the SPI index in 1995 and 2017, including the population size and geographical group. The latter plays a significant role, as points of the same group are scattered relatively close together. In this regard, the USA and Canada, together with several European economies, show higher levels of social progress in both years. The sub-Saharan countries are in the lower-left corner, although most of them have improved in the period; similar gains are seen in highly populated countries such as China, India, and especially in Indonesia. Other countries with low or medium levels of social progress in 1995 also experienced notable advances.

3.2 Distribution of social progress

The distribution of the SPI is represented in panel (a) of Fig. 3 and shows a markedly bimodal world in both 1995 and 2017. As suggested by the trends presented in the previous section, some improvement has taken place over this 23-year period; i.e. the distribution of social progress has moved to the right. However, polarization is persistent. The mode on the left is more prominent in both years, meaning that there is a higher density of countries with low SPI. In order to understand this global dynamic, its three pillars are separately analysed.

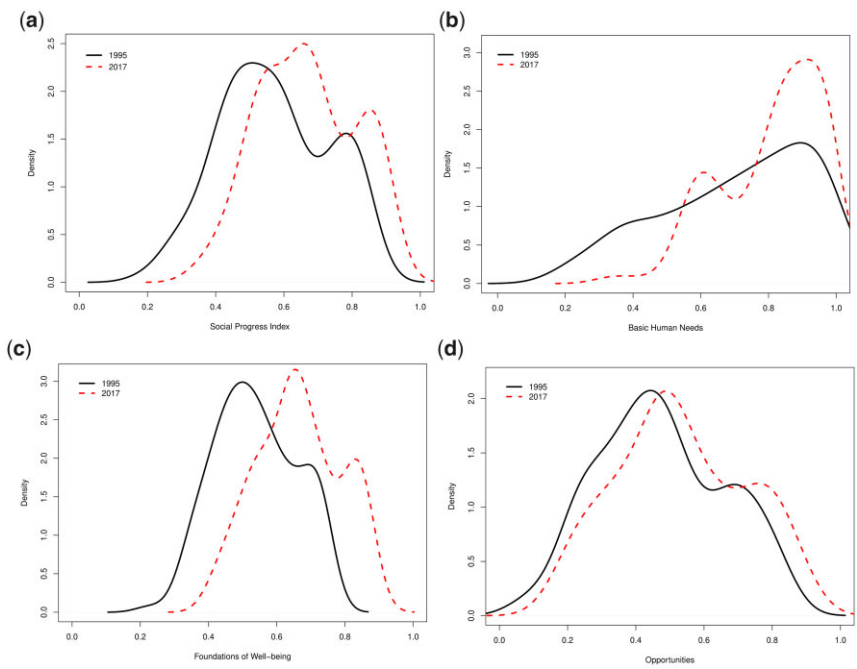

Fig. 3. Distribution of social progress. Kernel density estimations are computed as $\hat{f}(x)_t = \frac{1}{nh}\sum_{i=1}^{n} G\left(\frac{y-y_{it}}{h}\right)$, where y_{it} stands for social progress or pillar in country i and year t; G is a Gaussian kernel function of the form $G(y) = (\sqrt{2\pi})^{-1}\exp(-\frac{1}{2}y^2)$ and h is a bandwidth parameter computed using the proposal of Silverman (1986). (a) SPI. (b) Basic human needs. (c) Foundations of well-being. (d) Opportunities.

Regarding basic human needs (panel b), the main mode in 1995 is around the score of 0.9, grouping together advanced countries that have fully addressed this pillar; however, there is marked dispersion. Conversely, in 2017, the distribution has become bimodal. The mode on the right now has several developing East Asian and Latin American and Caribbean countries. The new left-hand mode is around the score of 0.6 and consists almost entirely of underdeveloped sub-Saharan countries, which despite a remarkable improvement still have relatively low scores.

Panel (c) shows the distributions for foundations of well-being and also points to a bimodal world, with a main mode in 1995 around the score of 0.5 and a smaller one close to 0.7. Whereas the world has progressed in terms of foundations of well-being, i.e. the distribution has also shifted to the right, there is greater polarization in 2017. The right mode includes the European countries, Japan, Australia, New Zealand, and Canada, and slightly behind, the USA. The main mode on the left groups together a mixture of developing economies worldwide, although there are differences among them, with Latin American and Caribbean, and Central Asian countries displaying higher scores than MENA and sub-Saharan economies.

The last panel (d) reveals that the distribution for the opportunities pillar is comparatively more stable over time. The distribution is bimodal in both 1995 and 2017, with the most numerous group showing lower scores. In addition, differences between the two modes are larger than for the other two pillars, and the gap remains virtually unaltered over the period. This greater stability might indicate that, whereas a large proportion of countries in the world are progressing in basic needs and foundations of well-being, opportunities are still limited in many countries.

4. Convergence in social progress

According to the previous analysis, social progress increased virtually everywhere between 1995 and 2017. However, this does not necessarily mean that cross-country disparities narrowed. In order to analyze this fact, this section studies both β-convergence and σ-convergence.

4.1 β-Convergence analysis

The concept of β-convergence was developed by Barro and Sala-I-Martin (1992) and measures the extent to which laggard countries catch-up with leading ones as time goes by. Formally, the β-convergence hypothesis to be tested is that $\mathrm{Cov}\left(y_{i0}, \frac{y_{iT}-y_{i0}}{T}\right) < 0$, where $\frac{y_{iT}-y_{i0}}{T}$ is the long-run average growth rate of social progress and y_{i0} is the initial score. β-convergence is first visually inspected in Fig. 4 and then formally tested.

Panel (a) of the abovementioned Fig. 4 shows a negative correlation between the average annual growth rate of the SPI in 1995–2017 and the level in 1995, suggesting a β-convergence pattern. The greatest advances are seen in sub-Saharan countries, which had the lowest levels of social progress at the beginning of the period. At more moderate rates, social progress also improved in Latin American and Caribbean and Asian countries. Particularly notable is the annual improvement in highly populated countries such as Indonesia (above 2%), and India and China (0.5% and 1%, respectively). In most European countries, North America and Japan, social progress barely increased. Finally, social progress declined in Venezuela, Burundi, the Central African Republic, Syria, and Ukraine.

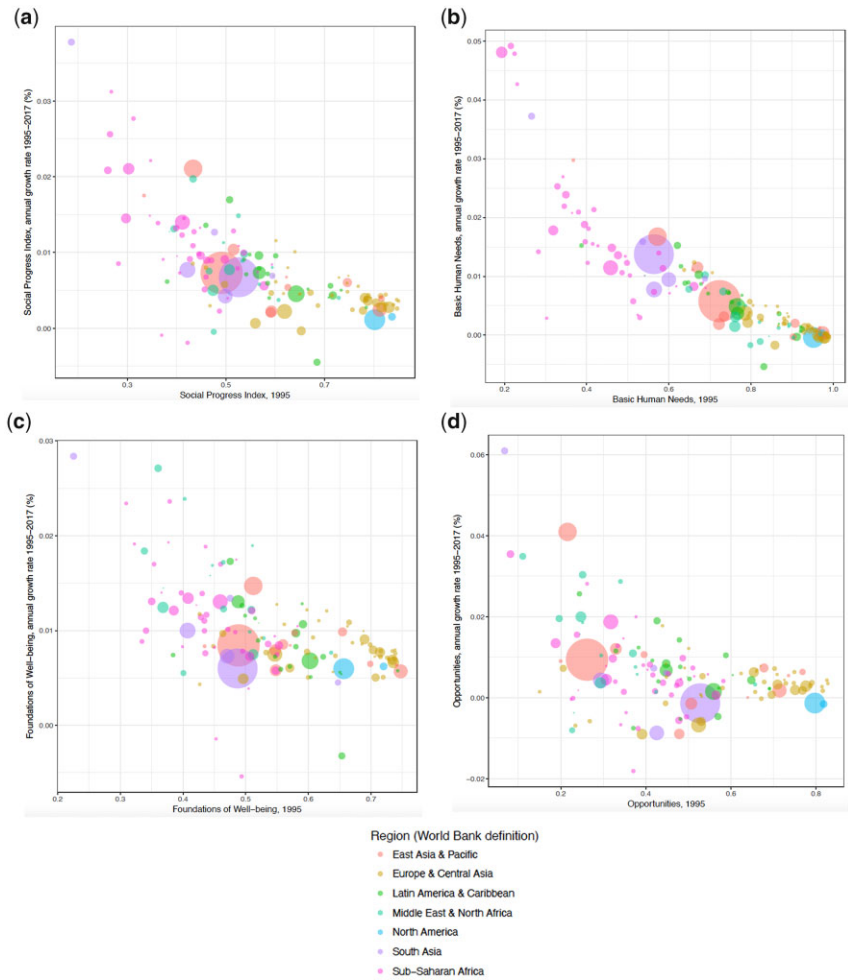

Fig. 4. Social progress and its pillars, 1995 versus average growth 1995–2017. (a) SPI. (b) Basic human needs. (c) Foundations of well-being. (d) Opportunities.

The results for basic human needs (panel b) display a much steeper negative slope, thus pointing to a stronger convergence pattern. Convergence seems to be especially high in sub-Saharan countries, some of which have annual growth rates close to 5% (Angola, Ethiopia, and Rwanda). With annual improvements between 1% and 2%, highly populated countries such as Indonesia and India stand out, whereas the score decreased in Syria, Ukraine, Saudi Arabia, and especially Venezuela, all countries with intermediate levels in 1995.

Panel (c) displays the results for foundations of well-being. Convergence in this pillar has been more limited. Again, sub-Saharan countries are among those with the highest annual growth rates (1–3%). Similar improvements are seen in almost all MENA countries and Indonesia. The rest of the countries grew around 0.5% per year, with the exception of three countries where foundations of well-being declined in the period: Venezuela, the Central African Republic, and Burundi.

Regarding opportunities (panel d), a more moderate catching-up is observed. Afghanistan and Indonesia are the countries that improved the most (5.8% and 4% per year, respectively). Opportunities grew in most countries at annual rates of between 0% and 2%, but declined in some countries, including India, Thailand, Turkey, and Russia, in addition to Venezuela, the Central African Republic, and Burundi, countries that also displayed a negative trend in the other two pillars. While still recording high scores in 2017, the USA and Canada stand out for their slightly negative trend in opportunities, whereas in Western European countries opportunities keep growing despite the initial high levels in 1995.

In order to formally test the hypothesis of β-convergence, the following dynamic two-way fixed effects regression has been run:

$$\ln y_{i,[t]} = b_{0,i} + a_t + (1 + b_1)\ln y_{i,[t-1]} + \varepsilon_{it}, \quad (6)$$

where $b_{0,i}$ captures country-fixed effects; a_t time-period-fixed effects; and $(1 + b_1)$ measures the effect of an increase in the log of SPI (or its pillars) in $t-1$ on current log values. It can be interpreted as a function of the speed of convergence (see Islam, 1995) and it is equivalent to the Barro and Sala-i-Martin (1992) framework. Inference on the convergence speed γ is obtained as $\gamma = -\frac{\ln(b_1)}{\tau}$, where τ measures the years/periods between t and $t-1$.[14]

Columns (2) and (3) in Table 4 report the estimated parameters and the convergence speed for a restricted specification of Equation (6) in which it is assumed that $b_0 = b_{0,i} + a_t$ for all i and t; i.e. the pooled OLS regression. Columns (4) and (5) report the estimates obtained from a country-fixed effects specification that allows $b_{0,i} \neq b_0$ for some i; finally, Columns (6) and (7) report the results for a two-way fixed effects model in which both country and time heterogeneity are allowed to avoid omitted variable bias. Note that including control variables in these estimations is complicated, as the left-hand side of the equation involves many variables captured in the SPI and its pillars, and so a serious problem of reverse causality could arise. Hence, instead of conditional β-convergence, the more restrictive absolute β-convergence hypothesis is tested, which states that countries' social progress converges in the long-run, independently of their initial conditions and structural characteristics. Nevertheless, the fixed-effects specifications make it possible to capture the transition speeds toward long-run equilibrium values of social progress in a hypothetical context in which the initial conditions are equal across countries.

In all the specifications, a positive and significant value is found for the parameter $(1 + b_1)$, with the speed of convergence ranging from 1.28% (opportunities) to 2.92% (basic human needs) in the pooled OLS specification; from 3.98% (foundations of well-being) to 10.96% (opportunities) in the country-fixed effects model; and from 7.52% (basic human needs) to 12.4% (opportunities) in the two-way fixed effects specification. Thus, correcting for the bias from unobserved heterogeneity leads to higher rates of convergence. Regarding the SPI, the convergence speed in the pooled OLS model is about 1.66% per year, whereas in the two-way fixed effects specification it is 8.40%. These large differentials in the convergence speed are in line with previous results in the context of growth regressions (see Islam, 1995; Abreu *et al.*, 2005). They are due to the fact that fixed effects models imply no cross-country differentials in the initial conditions affecting the long-run trajectories of social progress. Furthermore, the outcome of β-convergence in the SPI and

14 In the empirical work yearly data are used, so that $\tau = 1$.

Table 4. β-Convergence tests

	Pooled OLS		Country-fixed effects		Two-way fixed effects	
	$\hat{\beta}$	$\hat{\gamma}$	$\hat{\beta}$	$\hat{\gamma}$	$\hat{\beta}$	$\hat{\gamma}$
SPI	0.983***	0.0166	0.9508***	0.0505	0.9194***	0.0840
	(801.61)		(225.01)		(148.02)	
Basic human needs	0.971***	0.0292	0.9471***	0.0543	0.9276***	0.0752
	(836.16)		(257.24)		(205.84)	
Foundations of well-being	0.986***	0.0132	0.9609***	0.0398	0.8990***	0.1064
	(615.84)		(227.04)		(114.62)	
Opportunities	0.987***	0.0128	0.8962***	0.1096	0.8833***	0.1240
	(528.45)		(125.75)		(110.78)	

Notes: In all cases, the dependent variable is the logarithm of the indicators in period t. The results are obtained using the specification in Equation (6). $\hat{\gamma}$ is the implied convergence speed. In parentheses is the t-statistic.
***Significant at 1% level.
Source: Authors' calculations.

its pillars is robust to the aggregation method employed to build the indicator, as shown in Table A3 of the Online Appendix.

4.2 σ-Convergence analysis

The analysis carried out in Section 4.1 suggests a process of catching-up across countries in the sample regarding social progress and its pillars. However, Sul (2019) criticizes β-convergence as: (i) it may be the by-product of a temporary statistical illusion and (ii) it is a necessary but not a sufficient condition for a decrease in the cross-sectional dispersion. In this regard, Phillips and Sul (2007, 2009), Kong *et al.* (2019), and Sul (2019) consider that true convergence implies a reduction of cross-sectional dispersion over time, which is not guaranteed by β-convergence.[15] Figure 5 shows a reduction of the dispersion of the SPI and the basic human needs pillar between 1995 and 2017; this was not the case for foundations of well-being and opportunities, for which a fluctuating or even divergent trend is observed.

The reduction of dispersion is known as σ-convergence. Phillips and Sul (2007) developed a flexible test for modeling it in relative transition curves by means of the so-called log-t regression; convergence is found when scores converge to unity in the long-run ($\text{plim}_{t\to\infty} \frac{y_{it}}{y_{jt}} = 1$). As explained by Sul (2019), this notion of convergence can only be tested when panel data show an unequivocal trending behavior, which is not the case for many of the countries in the sample.[16] Thus, Kong *et al.* (2019) developed a more general test of σ-convergence, termed *weak σ-convergence*, which provides a rigorous asymptotic theory on

15 To see intuitively why β-convergence may not be enough for a reduction in differentials, note that countries can be β-converging toward one another while, at the same time, random shocks could be pushing them apart such that the dispersion might be increasing. Another case in which β-convergence would not reduce disparities is when countries i and i' both start from a similar SPI, but i' is on its long-run trajectory while i is far below its own trajectory. Initially, the dispersion of social progress will be low, but it will grow over time as i evolves faster than i' and approaches its long-run trajectory.

16 The results of trend regressions of the type $y_{it} = \alpha_i + \beta_i t + u_t$ show that there is no unequivocal trending behavior in the panel for any of the pillars, nor in the aggregate SPI.

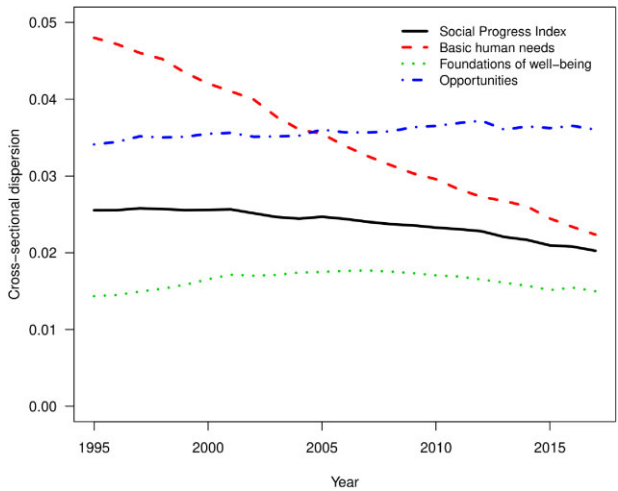

Fig. 5. Evolution of the cross-sectional dispersion of social progress and its pillars.

the implementation of a simple trend regression approach. Letting K_t denote the cross-sectional variance in a panel setting, the weak σ-convergence test is equivalent to verifying if $\text{Cov}(K_t, t) \leq 0$.

The weak σ-convergence is given by the t-statistic of the OLS estimate ϕ based on the Newey–West HAC estimator with lag length $L = \text{int}(T^{1/3})$ from the following simple trend regression:

$$K_t^y = \alpha + \phi t + u_t, \tag{7}$$

where K_t^y is the cross-sectional sample variance. In this context, (i) if $t_{\hat{\phi}} < -1.65$ or $t_{\hat{\phi}} \to -\infty$ then y_{it} is weakly σ-converging; (ii) if $t_{\hat{\phi}} > 1.65$ or $t_{\hat{\phi}} \to +\infty$ then y_{it} is diverging; and (iii) if $t_{\hat{\phi}} \to^d N(0,1)$ then y_{it} is fluctuating.

The results for the full period 1995–2017 and the sub-periods 1995–2008 and 2009–2017, which differentiate between pre-, and during and post-Great Recession years, are presented in Table 5. They show that cross-country SPI disparities decreased significantly in the whole period, with this reduction being especially pronounced between 2009 and 2017. This result is mainly driven by the pillar of basic human needs, for which a consistent reduction of disparities is found in both subperiods. Conversely, fluctuations are observed for the other two pillars. For foundations of well-being, a significant increase in disparities is found in the sub-period 1995–2008, followed by a decrease in 2009–2017. In contrast, differentials in opportunities reduced during the sub-period 1995–2008 and increased afterward.[17]

These results are robust to how the index employed to measure social progress is built (see Table A4 in the Online Appendix) and are in line with the study published by the United Nations (2019b). That study finds convergence in 'basic capabilities', which broadly

17 These findings are not affected by the fact that the scores of the SPI and its components are bounded. In that respect, having a large proportion of values close to the upper bound in 1995 could have led to a convergence result. However, only 6.7% and 0.65% of the values were above the 90th and 99th percentiles in 1995, respectively.

Table 5. Weak σ-convergence tests

	1995–2017		1995–2008		2009–2017	
	$100 \times \hat{\phi}$	$t_\phi(3)$	$100 \times \hat{\phi}$	t_ϕ (2)	$100 \times \hat{\phi}$	t_ϕ (2)
SPI	-0.024^{***}	−10.464	-0.015^{***}	−6.754	-0.043^{***}	−19.961
Basic human needs	-0.119^{***}	−36.947	-0.132^{***}	−53.903	-0.098^{***}	−35.343
Foundations of well-being	0.002	0.409	0.027^{***}	7.452	-0.031^{***}	−16.815
Opportunities	0.000	0.428	-0.029^{**}	−2.495	0.000	0.613

Notes: Results correspond to the estimation of Equation (7), where the dependent variable is the cross-sectional dispersion of the SPI and its pillars over time defined as: $K_t = \frac{1}{n}\sum_{i=1}^{n}(y_{it} - \bar{y}_t)^2$. The t-statistic corresponding to parameter ϕ, $t_\phi = \frac{\hat{\phi}}{\sqrt{\hat{\Omega}_u^2 / \sum_{t=1}^{T}(t - T^{-1}\sum_{t=1}^{T} t)^2}}$, where $\hat{\Omega}_u^2 = \frac{1}{T}\sum_{t=1}^{T}\hat{u}_t^2 + 2\frac{1}{T}\sum_{l=1}^{L}\varphi_{l,L}\sum_{t=1}^{T-l}\hat{u}_t'\hat{u}_{t+l}$ and $\varphi_{l,L}$ is Bartlett lag kernel weight and $L = \text{int}(T^{1/3})$.

**Significant at 5% level.

***Significant at 1% level.

Source: Authors' calculations.

correspond to basic human needs, but a lack of convergence in 'enhanced capabilities', largely representing the pillars foundations of well-being and opportunities.

5. Social progress and GDP per capita

This section compares the SPI and GDPpc (PPS, constant 2017 dollars; with data retrieved from the World Bank).[18] The Pearson correlations between social progress (and its pillars) and GDPpc are positive and statistically significant: 0.71 for the SPI, and 0.71, 0.68, and 0.58 for basic human needs, foundations of well-being, and opportunities, respectively. Accordingly, GDPpc seems to be relatively good at describing basic and intermediate aspects of social progress, but slightly less successful at capturing more sophisticated features of social progress represented by opportunities.

The scatter plots in Fig. 6 for the SPI and GDPpc show a positive association in both 1995 and 2017 (panels a and b, respectively). In line with the results reported by Pritchett (2022), the relationship is non-linear, indicating that, as a general rule, social progress can reach intermediate levels even in low income countries. That said, oil-producing MENA countries show high levels of GDPpc but moderate to low SPI. Regarding growth rates (panel c), a weak relationship is found, suggesting remarkable differences in the evolution of the two variables. As a rule of thumb, GDPpc has grown at a faster rate than the SPI worldwide, but especially in many Eastern European and Asian countries. In sub-Saharan Africa, however, most countries registered similar growth in both variables.

Finally, Table 6 reports matrices showing probabilities of countries belonging to either the same category or different categories in terms of income and social progress. To that end, countries have been classified according to the distributions of both GDPpc and the SPI, as well as their growth rates. Categories are 'Low' if the score is below the 25th percentile, 'Medium' for values between the 25th and 75th percentiles, and 'High' for values

18 Afghanistan, Canada, Cuba, Djibouti, Liberia, Syrian Arab Republic, and Venezuela are excluded from the analysis due to missing values.

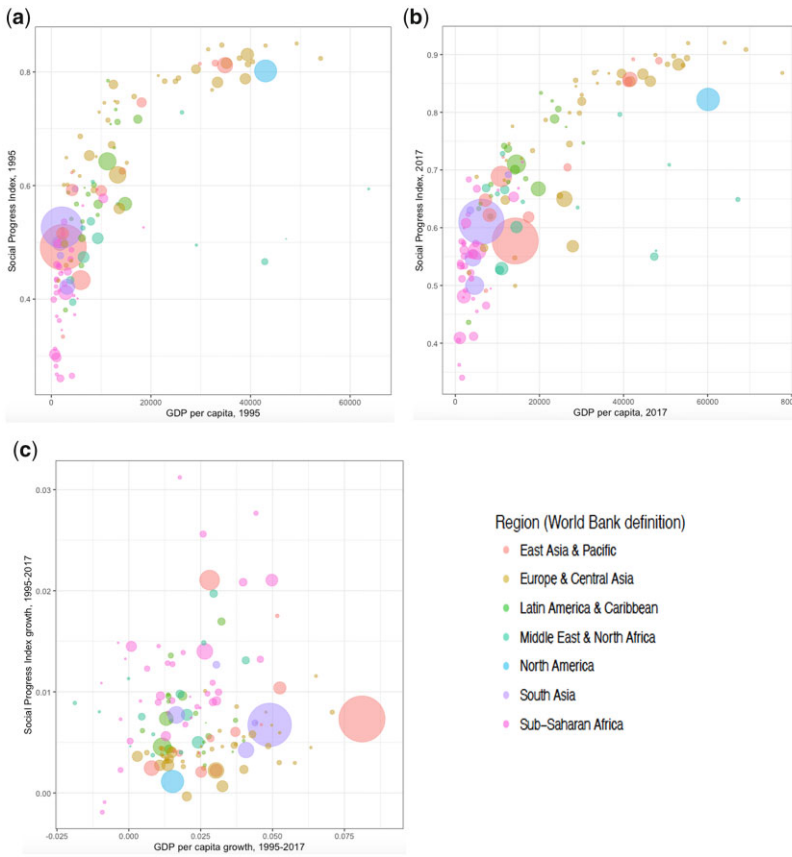

Fig. 6. GDPpc and social progress. (a) GDPpc versus SPI, 1995. (b) GDPpc versus SPI, 2017. (c) GDPpc versus SPI, growth 1995–2017.

Table 6. Categories of GDP per capita and social progress

GDPpc versus SPI	1995	2017	Δ1995–2017
Low–low	60.61	72.73	30.31
Low–medium	39.39	27.27	48.48
Low–high	0.00	0.00	21.21
Medium–low	19.70	12.12	21.21
Medium–medium	69.70	78.79	50.00
Medium–high	10.60	9.09	28.79
High–low	0.00	3.03	12.12
High–medium	21.21	15.15	63.64
High–high	78.79	81.82	24.24

Notes: Low (< P25); medium (P25 ≤ medium ≤ P75), high (> P75). The matrices report probabilities of belonging to a specific SPI group considering the GDPpc group, expressed in percentages.
Source: Authors' calculations.

over the 75th percentile. Focusing on levels, the matrices indicate that the highest probability is for belonging to the same category, especially for countries with medium and high income; extreme cases (i.e. high GDPpc and low SPI or vice versa) are not found. The results are quite different for growth rates, indicating that income has grown more than social progress in many countries. In fact, the highest probabilities for SPI growth are in the category 'Medium', even in places presenting high income growth; there are, however, several extreme cases. In particular, 21.2% of the countries present low GDPpc growth but high SPI growth and 12.1% of the countries experienced high GDPpc growth but low growth in SPI. Results for the SPI pillars are similar and are provided in Table A5 of the Online Appendix. In sum, the results suggest that GDPpc and the SPI, despite being highly correlated, are not substitutes. This is especially true for the most advanced features of social progress. Therefore, complementing GDPpc with non-economic indicators such as those included in the SPI can offer a more comprehensive perspective of countries' development.

6. Conclusions and prospects for future research

This research deals with the challenging issue of the measurement of social progress. Grounded on the earlier index produced by Porter *et al.* (2014), the paper proposes one of the most comprehensive frameworks in the recent literature. A composite index of social progress is built for 139 countries over the 23-year period 1995–2017. It considers three pillars of social progress; namely, basic human needs, foundations of well-being, and opportunities, which in turn are represented by 11 components and 45 raw indicators. Notably, the index allows for comparisons both across countries and over time, which constitutes a novel contribution to the literature and makes it possible to conduct a convergence analysis.

The results show that, since the mid-1990s, social progress has improved in virtually all the countries analysed. However, they also depict a highly polarized world. The evolution of the pillars of social progress has been unequal, with large improvements in basic human needs and much more moderate advances in foundations of well-being and opportunities. In spite of the abovementioned polarization, some evidence is found of a reduction in cross-country disparities, spurred by the catching-up of highly populated Asian and Latin American economies. Furthermore, convergence in social progress has mainly been driven by the narrowing of disparities in basic human needs, since fluctuations are observed in foundations of well-being and opportunities.

Social progress can improve the social inclusion of the most vulnerable groups by making societies more cohesive and resilient, and by reinforcing the links between people and institutions. A sound institutional setting is essential for long-run social progress, although there are other actors involved besides governments, including civil society and the private sector. There is a need to undertake major initiatives in the laggard countries to achieve social progress beyond basic human needs. In doing so, aspects such as guaranteeing access to knowledge and information and communication technologies, protecting the environment, improving health and wellness, and aspects related to personal freedom, tolerance, inclusion, and gender parity should be considered as key elements in development policies. Indeed, some of the strategies of the World Bank Social Development Program acknowledge the importance of these issues and have a focus on reducing conflict, gender-based violence, and promoting citizen engagement. All these spheres are considered in the index of social progress developed in this research.

This paper has contributed to a better understanding of disparities in social progress, and trends therein, although it is not without limitations. On the one hand, composite indexes are useful for summarizing and performing comparisons, but they do have certain shortcomings; e.g. subjectivity regarding the selection of indicators or aggregation techniques. There are also data availability issues when it comes to measuring some of the facets of social progress, especially in long-run analyses. Furthermore, some features of social progress are far more complex than the selected proxies. On the other hand, the theoretical framework applied may be imperfect and fail to capture all the important elements of social progress, which can be subject to different interpretations in different cultures. In that regard, the fact that the SPI is linked to the widely accepted United Nations' Sustainable Development Goals does not completely guarantee its universal character. Finally, the SPI provides countries' average performance, but within-country disparities remain unexplored.

The aforementioned limitations should, however, encourage future research. In this regard, avenues for further research include the following: carrying out uncertainty and sensitivity studies aimed at assessing the robustness of the index of social progress, and thus its usefulness for policymaking; exploring new facets of social progress with better data availability facilitating the measurement of this concept; seeking a better understanding of the specific factors that enable social progress as well as those hindering its achievement; and looking at within-country inequality to gain insights into how social progress reaches people. These are just some of the challenges awaiting researchers' attention in this burgeoning field of the literature.

Supplementary material

Supplementary material is available on the OUP website. These are the data, the detailed results, the replication files, and the Online Appendix.

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