



closing gaps in European social citizenship

***Alternative approaches to the study of poverty
and social exclusion in Europe***

EUROSHIP Working Paper No. 13

February 2022

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 870698. The opinions published in this deliverable only reflect the authors' view. The Agency and the Commission are not responsible for any use that may be made of the information it contains.

EUROSHIP Working Papers are outputs from EUROSHIP project (euroship-research.eu). The series is edited by the project coordinator Professor Rune Halvorsen. The working papers in the series are intended to meet the European Commission's expected impact from the project:

- i) to advance the knowledge base that underpins the formulation and implementation of relevant policies in Europe with the aim of exercising the EU social rights as an integral part of EU citizenship and promoting upward convergence, and
- ii) to engage with relevant communities, stakeholders and practitioners in the research with a view to supporting social protection policies in Europe. Contributions to a dialogue about these results can be made through the project website euroship-research.eu, or by following us on Twitter: @EUROSHIP_EU.

To cite this report:

Biggeri, M, Ciani, F, Ferrone, L et al. (2022) Alternative approaches to the study of poverty and social exclusion in Europe. EUROSHIP Working Paper No. 13. Oslo: Oslo Metropolitan University. DOI: 10.6084/m9.figshare.19188206. Available at: <https://euroship-research.eu/publications>.

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The original version of this working paper was submitted to the European Commission's Research Executive Agency (REA) as EUROSHIP Deliverable 3.3 in November 2021.

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Abstract

In this paper we suggest two alternative approaches to the monitoring of developments in poverty and social exclusion across Europe. The first part of the paper provides a structured overview of the dashboard approach, centred on ways to improve current monitoring tools by better relating structures to outcomes and extending the role of social rights-based indicators. We describe how dashboards are used in the European Union monitoring context, as well as their strengths and weaknesses when it comes to interpretation, cross-country and cross-time comparison, and informing policy makers. The chapter also provides an overview of indicator types which should be considered to be included as a part of an improved Social Scoreboard that better reflects a social citizenship approach.

In the second part of the deliverable, the data related to the Social Scoreboard are used to explore the potential added value linked to the elaboration of a composite index. The Social Scoreboard (SSB) is a composite set of indicators accompanying the EPSR. The multidimensional composite indicator is developed according to the methodology proposed by Mauro, Biggeri and Maggino (2018). The proposed approach aims at achieving full sensitivity, continuity, flexibility in substitution between dimensions of social citizenship, and a straightforward interpretation of the results. In particular, this approach will allow better assessment of the heterogeneity of achievements in the different dimensions of social citizenship. In other words, the degree of substitutability between dimensions can be directly linked to the overall achievement of social citizenship.

List of abbreviations

Countries

AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czechia
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HR	Croatia
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom
IS	Iceland
NO	Norway
CH	Switzerland
RS	Serbia

1 Introduction

The European Pillar of Social Rights (EPSR) constitutes a strategic asset for the future of the European Union: the events that characterised the last years (including Brexit and the growing mistrust toward European institutions) delineate a critical picture for the EU. To foster the upward social convergence of the EU is thus one of the main opportunities to build a sustainable, resilient and prosperous future for the EU. The social and economic consequences of the COVID pandemic add further unknowns to this already complex scenario. To effectively monitor the implementation of the EPSR is thus a relevant issue both from a scientific and a practical/political point of view.

Noll (2018: 954) highlights that social monitoring “(...) may be defined as a systematic and continuous observation of individual and societal well-being and related changes across time by making use of quantitative measurement instruments, e.g. indicators systems, indicator dashboards or composite indices.” Two of these instruments are explored in our paper to contribute to the debate on how to effectively promote the monitoring of the EPSR by analysing the Social Scoreboard (SSB): firstly, we propose strategies to improve it and secondly, we explore the possibility of elaborating a composite indicator starting from the SSB dashboard.

Since the very beginning, the use of social indicators dashboards can be motivated by the assumption that a qualitative lens is needed in order to observe and systematically assess what really matters for our societies. In his seminal work, Bauer (1966) defines social indicators as a form of quantitative evidence that enables us *“to assess where we stand and are going with respect to our values and goals, and to evaluate specific programs and determine their impact”*. Bauer’s definition highlights four interesting issues.

- i. Social indicators should be used to deal with complex phenomena and to answer complex questions: “where do we stand” and “where are we going” are much more complex and less defined questions than, as an example, “how rich we are”, since they are inherently multidimensional.
- ii. The relevance of social indicators is defined according to what a society has reason to value (Sen, 1999). In this way, social indicators are inherently associated with public debate and deliberation¹.
- iii. Social indicators entail a collective dimension: the proposed definition deals with “where WE stand” and “OUR values and goals”.
- iv. Social indicators may be used to check whether policies, programmes and projects work as expected.

As reported by Land and Michalos (2018), since the early steps of the debate about social indicators, social indicators development has been conceived to shift the focus of measurement from means (e.g. income) to ends (i.e. wellbeing, quality of life, social inclusion etc.). Thus, the implicit and explicit rationale to go beyond GDP was already clear in the late

¹ Interestingly, Johanson (1973), the “father” of the Swedish Level of Living Survey, witnesses that the guiding question leading to the establishment of the survey was *“What kind of information is needed to give public discussion on low income problems and social policy and acceptable base?”*

sixties (e.g. USDHEW, 1969), well before “beyond GDP” became a well-known and shared tagline in social research.

Moving effectively “beyond GDP” entailed the elaboration of concepts and frameworks more complex and multifaceted than income and other related indicators. Concepts such as standard of living (Sen, 1988), level of living (Johanson, 1973), social exclusion (Atkinson, 2000), quality of life (Diener, 1995) and then human development (Sen, 2000) and sustainable development (UN General assembly), are inherently multidimensional: as a consequence, their operationalisation needs, in first instance, a dashboard of indicators selected in coherence with the underlying key concept(s)².

Not surprisingly, during the last decades several turning points of policy setting were marked by the identification and public disclosure of dashboards of indicators with the explicit aim of increasing the accountability of policy making and improving the quality of public debate. In order to provide practical onsets of this trend, it could be useful to recall the role of the MDGs and SDGs that extensively contributed to shape the global policy agenda after 2000. The United Nations Millennium Declaration (September 2000) expressed a universal commitment to boost development and eradicate poverty and, more in general, all forms of extreme deprivation. This commitment was summarised by 8 goals (i.e. the Millennium Development Goals or MDGs) furtherly detailed by 21 targets. The progress toward the achievement of the MDGs and the related targets was tracked through a dashboard of 60 indicators officially adopted by the UN³. The 2030 Agenda for Sustainable Development⁴ was officially adopted by the UN and member states in 2015 and represented the evolution of the Millennium Declaration. This ambitious policy framework was summarised by 17 Sustainable Development Goals (SDGs): the goals were then operationalised through 169 targets monitored through a dashboard of 231 indicators. It is worth underlining that the indicators framework was officially adopted by the UN General Assembly in 2017.

A similar process can thus be identified with regard to the EPSR. The European Parliament, Commission and Council jointly launched the EPSR in Goteborg in 2017 to reaffirm the centrality of social rights as a core component of European citizenship. This fact was considered as a sizeable shift of trajectory for the European institutions whose actions after the 2008 Great Recession drew criticisms and mistrust for the alleged excessive focus on macro-economic stability in spite of the harsh social consequences of the crisis (Gomez, 2015; Arpino et al., 2020). The EPSR was articulated in 20 principles⁵ and then operationalised through the EPSR Action Plan⁶. The Social Scoreboard (SSB) was thus conceived as a set of 35 indicators.

In parallel with the growing interest in social indexes, the use of composite indicators has become more and more popular. In the 90s, the UNDP decisively contributed to this process by developing the Human Development Index (HDI) whose success among policy makers,

² Whether aggregating or not the indicators set in one composite index is a subject extensively discussed later on in the paper

³ See <https://unstats.un.org/unsd/mdg/Host.aspx?Content=Indicators/OfficialList.htm>

⁴ See <https://sdgs.un.org/2030agenda>

⁵ See https://ec.europa.eu/info/strategy/priorities-2019-2024/economy-works-people/jobs-growth-and-investment/european-pillar-social-rights/european-pillar-social-rights-20-principles_en

⁶ See <https://op.europa.eu/webpub/empl/european-pillar-of-social-rights/en/>

researchers and activists deeply influenced (and still influences) the debate about development (Stanton, 2007). The measurement of political and democratic freedoms at the national level led to the development of composite indexes such as the Freedom in the World index or the Polity Index (Högström, 2013). In several countries, efforts were put in place to elaborate composite indicators able to reduce the weight of GDP in guiding public debate and policy decisions: as an example, starting from 2013, the Italian Statistical Institute has developed the equitable and sustainable wellbeing index or BES (Giovannini and Rondinella, 2018). At the micro level, the growing attention on multi-dimensional deprivation raised the interest toward multi-dimensional poverty indexes such as the MPI developed by the Oxford Poverty and Human Development Initiative (Alkire and Santos, 2014).

The paper is structured in the following way. Section 2 lists the main arguments on using either the dashboards or the multidimensional synthetic approach to monitor social progress, focusing on the complementarity of the two approaches. Further, the two approaches are presented separately and from different angles. Section 3 overviews the ways to improve the current SSB as a dashboard, by listing the aspects and the types of indicators that are either missing or less represented by its renewed version. Section 4 looks in a quantitative way at the potentialities of combining the use of SSB with the elaboration of a composite multidimensional indicator. Finally, Section 5 summarizes our findings.

2 The complementarity of dashboards and multidimensional synthetic indicators

From a methodological perspective, the strengths and weaknesses of the dashboard approach are usually discussed in opposition to those of multidimensional indices, and *vice versa*. The approach we take here is to focus on the complementarity of dashboard and synthetic indicators. Based on the literature on the characteristics of the two, it is possible to identify at least eight reasons that can justify this complementarity.

- *Different approaches to weighting.* The disaggregated nature of dashboards allows for final users to decide for themselves what to focus on and to weight the information the dashboard contains according to their own convictions (Boulanger, 2008: 6-7). In contrast, aggregated measures already include differently weighted dimensions of a given concept. This weighting procedure may be, by nature, arbitrary and as such, debatable (Boulanger, 2008: 6-7). Additionally, normative considerations behind the weighting procedure are often not made explicit (Stiglitz et al., 2010: 104).
- *Interpretation vs. communication.* Due to the fact that dashboard dimensions are not aggregated, conclusions drawn from them may also be more straightforward when it comes to their interpretation. An aggregated measure is easier to communicate and can be used to summarise complex phenomena, but policymakers may have trouble interpreting it, or it may even be misinterpreted which can lead to policy decisions not addressing the most problematic issues (Soffia, 2018: 75).
- *Loss of information.* Dashboards avoid loss of information (Fleurbaey and Blanchet, 2013: 34). When it comes to synthetic indicators, on the other hand, a lot of information can be lost, especially if their individual components are not strongly correlated. However, it can also be claimed that dashboards may just serve to

postpone the decisions required to construct an index by collecting heterogeneous measures without explaining why they are included (Stanig et al., 2013: 202).

- *Analysis of subgroups of the population.* The lack of aggregation and weighting of indicators also makes it easier to include new indicators or dimensions in a dashboard as it does not affect indicators which are already included. This makes dashboards more flexible when it comes to incorporating the needs of policymakers and representatives of civil society (Fleurbaey and Blanchet, 2013: 33) such as having specific indicators for vulnerable groups or, more in general, sub-groups of the overall population. In the case of composite indexes, these specificities are likely to be barely detectable because of the synthesis process. At the same time, composite indexes allow to measure the distance between different groups in terms of overall performance and not according to a single indicator.
- *Trade-offs.* A common argument in favour of treating each indicator separately is that in this way, the plurality of elements that contribute to well-being and quality of life is recognized (Nussbaum, 2011; Sen, 1999). However, this also means that dashboards are “unsuitable for making policy decisions involving trade-offs as there is no way to investigate how decision-makers use dashboards, leaving the most important part of the policy-making process shrouded in mystery” (Berik, 2020: 76). The construction of a composite index entails a value judgement on the degree of substitutability allowed between its components, which has policy implications. The use of the arithmetic mean implicitly assumes that all components can be substituted for each other, creating an incentive to focus only on those policy areas which are more easily improved. The geometric mean, on the other side, heavily penalizes low scores in its components.
- *Comparability.* When it comes to analysing data, the fact that dashboards present indicators separately makes it possible to compare countries on each individual indicator and to look at what the “strengths” and “weaknesses” of a certain country are on different dimensions of a concept (Stanig et al., 2013: 200). In the case of aggregated measures, international comparisons carry a different type of information. For example, countries can perform equally well on a given measure while, at the same time, performing completely differently on the different sub-dimensions (Lafortune et al., 2018: 9). The opposite can be true as well: countries with different aggregate scores may be very similar in certain dimensions (Bericat and Jiménez-Rodrigo, 2019: 35). Therefore, aggregation can hide problematic areas, especially if a country performs well on most of the given indicators (Lafortune et al., 2018: 9). Nonetheless, we have to recognize what is probably the most obvious drawback of using the dashboard approach: because of the multitude of information it includes, it is very hard to formulate clear messages regarding trends over time or across countries based on a dashboard (Fleurbaey and Blanchet, 2013: 34).
- *Interlinked performances.* When it comes to the topic of quality of life and well-being in particular, a problem with dashboards is that they do not reflect joint distribution (and with that, interrelations) of deprivations across the population (Alkire and Robles, 2016). „At present, even basic descriptive information on the joint distribution of dashboard components is lacking from nearly all dashboards. Including it where possible would shine a light on interlinked deprivations” (Alkire and Robles, 2016: 5-

6). Composite indexes allow to have a more complete picture, which includes the trade-offs between different components (dimensions).

- *Causality and hierarchies among indicators.* Dashboards usually do not indicate causal links or hierarchies among their elementary indicators (Stiglitz et al, 2010: 102). This also makes data analysis and outlining trends more difficult. The construction of synthetic indicators involves decisions regarding causality and hierarchies, therefore, they are one step away from being purely descriptive.

3 The dashboard approach

A dashboard is a monitoring tool that displays, often in an intuitive and graphical way, key performance indicators and therefore, allows decision-makers to have a comprehensive overview of the situation/trends and to analyse main factors, key drivers and mechanisms that may lie behind it. Being a careful selection of measures from a large pool of data, the set-up of a dashboard requires a conceptual frame and a comprehensive, in-depth and evidence-based expertise of the given area. Table 1 shows an overview of the strength and weaknesses of dashboards, based on the characteristics outlined in Section 2.

Table 1 Strengths and weaknesses of the dashboard approach

Pros	Cons
Allows final users to decide what to focus on and to weight information according to their own convictions.	Hard to formulate clear messages regarding trends over time or across countries.
Straightforward interpretation.	Does not reflect joint distribution (and with that, interrelations) of dimensions (e.g. deprivations) across population.
Makes it possible to compare countries on each individual indicator, as well as to look at the „strengths“ and „weaknesses“ of countries.	Not suitable for making policy decisions involving trade-offs as there is no way to know how decision-makers use it.
Treats each indicator separately, thus, recognizes plurality of elements that contribute to a concept (e.g. well-being and quality of life).	May just serve to postpone the decisions required to construct an index.
Flexible in incorporating needs of policymakers and members of civil society.	Usually does not indicate causal links or hierarchies among indicators.
Avoids loss of information.	
Can be used to build aggregate indices.	
Helps identify gaps in existing data: useful in developing new indicators.	

Dashboards and the dashboard approach itself are well-used tools for social monitoring.⁷ Recalling multidimensional concepts mentioned already in the introductory section like standard of living, quality of life (e.g. OECD Doing Better for Children, UNICEF Child Well-being reports, IPOLIS), well-being (e.g. OECD *How's Life* report), social citizenship (e.g. Social Scoreboard, SPIN) may all serve as a basis for the selection of indicators, being themselves very much interconnected with each other.⁸ Other approaches with a narrower scope also exist (e.g. OECD Family Database, OECD Inequality Database). The SSB is in the focus of this paper and therefore, we only include dashboards used by the European Union to monitor the performance of member states.

In what follows, we overview the main dashboards used by the European Commission to monitor social progress (Subsection 3.1) and we take stock of indicator types which might be strongly considered to be part of an improved SSB that better reflects a social citizenship approach (Subsection 3.2).

3.1 An overview of dashboards

This subsection deals with how dashboards are used in the European Union monitoring context, by introducing three tools which are among the most widely used in the EU: the *Portfolio of EU Social Indicators for the Monitoring of Progress Towards the EU Objectives for Social Protection and Social Inclusion* (Social Protection Committee, 2015), the *Social Scoreboard of indicators* supporting the EPSR, as well as the *EU Sustainable Development Goals (SDGs) Dashboard* (SDSN and IEEP, 2020), based on the goals adopted by the UN (Sachs et al., 2021).

The *Portfolio of EU Social Indicators for the Monitoring of Progress Towards the EU Objectives for Social Protection and Social Inclusion* (Social Protection Committee, 2015) is an extensive instrument designed to measure progress towards the commonly agreed objectives, and is more an indicators system than strictly a dashboard. Among its goals was to monitor developments in reaching the Europe 2020 targets as well. Data for the indicators is provided by Eurostat. The indicator system consists of four portfolios: 1. Overarching portfolio, 2. Social inclusion portfolio, 3. Pensions portfolio, 4. Health and long-term care portfolio. The Overarching portfolio takes the most important indicators from the three others, as well as some overarching ones which cannot be connected to any of the strands. In each portfolio, there are a number of primary and secondary indicators, as well as context indicators. The indicators were chosen in a way as to cover all dimensions of the overarching objectives as well as the common objectives relating to a particular portfolio (Social Protection Committee, 2015).

⁷ For a more comprehensive overview of the social indicator movement and developments in social monitoring, see, for example, Noll (2016).

⁸ It is especially hard to make a clear distinction between the quality of life and well-being concepts. As Gábor and Kopasz (2014: 10) highlight, "(...) existing well-being indicator systems aim to measure both objective and subjective aspects of people's well-being and thus use both objective and subjective indicators. However, these indicator systems differ in how subjective indicators are defined. Some of them use the term 'subjective' referring to the subjective appreciation of objective conditions (e.g. subjective health status), while others use at referring to intrinsically subjective phenomenon (e.g. overall life satisfaction, happiness) as well." For a different approach of quality of life, see Noll and Zapf (1994: 2).

The Portfolio served as a basis for constructing the *Social Scoreboard*⁹ which is a set of indicators aimed at monitoring societal progress in EU Member States in the fields of employment and social policy. Its first version was published by the European Commission (EC) in 2017. Recently, in the beginning of 2021, the Scoreboard was renewed by the EC and was endorsed by the Ministers of Employment and Social Affairs of the European Union in June 2021. Its three main dimensions (referring back to the three main priorities of the EPSR) are *equal opportunities* in skills development, life-long learning and active support for employment, *fair working conditions* to measure the evenness between flexibility and security to facilitate job creation, job take-up and the adaptability of firms, and *promoting social dialogue and social protection and inclusion*, to reflect access to health, social protection benefits and high quality services, including childcare, healthcare and long-term care, which are essential to ensure dignified living and protection against life's risks.

In the Scoreboard, each dimension has its headline indicators as well as its secondary indicators. This structure is similar to the one applied in the case of the *Portfolio of EU Social Indicators*, except for the context indicators which are missing here. For example, headline indicators for the *Fair working conditions* dimension include the *employment rate*, the *unemployment rate*, the *long-term unemployment rate* and the *real gross disposable income of households per capita*. The secondary indicators are the *activity rate*, *activation measures*, the *youth unemployment rate*, *employment in current job by duration*, *labour transitions from temporary to permanent contracts*, as well as the *in-work at-risk-of-poverty rate*. Data sources for the Scoreboard are part of the European Statistical System and as in the case of the Portfolio, are provided by Eurostat (e.g. from the EU Labour Force Survey or the EU Statistics on Income and Living Conditions database). Most recently, in 2021, an updated list of headline indicators was put forward by the European Commission.

The SDGs Dashboard is a UN initiative and is intended to monitor progress on the 17 Sustainable Development Goals adopted by the United Nations in 2015 (Sachs et al., 2021). The goals include, among others, *no poverty*, *zero hunger*, *good health and well-being*, *quality education* and *gender equality*. The European Commission publishes a separate EU SDG indicator set every year, in order to align the goals with the challenges faced by developed countries. In the latest dashboard of 2021, there are 6 indicators belonging to each goal. For example, Goal 2, *End hunger, achieve food security and improved nutrition and promote sustainable agriculture*, is monitored by looking at the *obesity rate*, the *agricultural factor income per annual work unit*, *government support to agricultural research and development*, *area under organic farming*, the *harmonised risk indicator for pesticides* and *ammonia emissions from agriculture*. In addition, as in the case of the original UN SDGs, based on the indicators, a *Sustainable Development Goals Index* is constructed in order to sum up the progress of countries and to rank them according to how far they have come in reaching the goals. The range of the index is 0-100. The progress of countries on the included indicators is summed up annually in the *Europe Sustainable Development Report* (SDSN and IEEP, 2020).

The three dashboards described here are all connected to each other and were partially based on each other. On the whole, about half of the indicators of the scoreboard can also be found in the portfolio. In the case of the EU SDGs, it is an explicit goal to include indicators from high-

⁹ Read more on the Eurostat website: <https://ec.europa.eu/eurostat/web/european-pillar-of-social-rights/overview>

level EU dashboards, „in order to ensure policy relevance” (SDSN and IEEP, 2020). Therefore, 12 headline indicators as well as 7 secondary indicators from the scoreboard were included in the EU SDG indicator set. To see in detail which SSB indicators are also included in the other two dashboards and which ones are not, see Appendix 1.

3.2 Ways to improve current monitoring tools

In what follows, we provide an overview of indicator types which might be strongly considered to be part of an improved SSB that better reflects a social citizenship approach. First, we focus on measures of inequality that allow us in the first place to assess differences in societal outcomes, as well as to characterize the situation of vulnerable groups in Europe. The current SSB only includes a few such measures (e.g. gender and disability gap in employment, child-focused indicators), while it also provides breakdowns at regional level and by degree of urbanisation in separate tables. Second, social policy indicators are mapped that could serve as more direct measures of the role of the welfare states in the security and the autonomy domains of the social citizenship concept. The presence of social policy indicators in the SSB is very restricted: while eight indicators are part of it, half of them are input measures (on social expenditure). Finally, a specific aspect of the social citizenship concept is considered: what if the European Union was a single society? Relative and absolute measures of poverty are discussed according to this pan-European approach.

3.2.1 Measuring inequalities

Policymakers, researchers and many other social actors agree that there is a need to tackle inequalities in our modern societies, but there is much less consensus when it comes to specific goals, priorities and methods.

With a few notable exceptions, the indicators of the SSB measure central tendencies (e.g. population or main group-specific averages) of outcomes, but less emphasis is put on inequalities in these outcomes, as well as on other aspects of inequality (see Appendix 2). However, recently, an important step forward has been made in this respect, when the Joint Research Centre produced a report (Alberti et al., 2021) at the request of the European Parliament. The report proposed the Multidimensional Inequality Monitoring Framework (EU MIMF). One of the aims of setting up EU MIMF is to help broaden and deepen the scope of frameworks monitoring progress towards a more cohesive and social Europe, such as the SSB (Alberti et al., 2021: 4). The JRC report views inequality as a multidimensional concept and the authors discuss five approaches that may provide both conceptual and empirical frames for the development of inequality indicators.

The vertical inequality approach looks at the distribution of an outcome of interest across the whole population. The metrics this approach uses can be either absolute or relative. The JRC report lists the Gini coefficient, quintile and decile ratio metrics, as well as the coefficient of variation as relative measures, while the absolute Gini coefficient and the standard deviation are listed as absolute measures (Alberti et al., 2021: 11). The SSB includes the S80/S20 quintile ratio as a vertical inequality indicator. We may list here the relative income poverty indicator as a relative vertical metric, too, specifically applied to the bottom-end of the distribution and which is also part of the Scoreboard. Further, measuring the gap between those at the bottom-

end of the distribution and the rest of the population may also improve our knowledge on vertical inequalities within a society (e.g. UNICEF 2010, 2016).

Horizontal inequality, according to the JRC report (Alberti et al., 2021: 11), shifts the focus from inequality among individuals to inequalities between groups. Reflecting on the differences in outcomes according to the socio-economic status of individuals, parents or households (e.g. according to educational attainment, intensity of labour market attachment, gender, household composition, type of settlement, migrant status or ethnicity) can provide an important input for policy making, also by shedding light on the situation of specific vulnerable groups (Gábos and Kopasz, 2014: 25-26). A direct comparison between groups can be provided by metrics like absolute gaps, ratios, rates, shares, odds ratios, etc. (Alberti et al. 2021: 12). The SSB includes several measures of horizontal inequality in poverty, social inclusion and quality of life outcomes: child indicators of poverty or social exclusion, gender gap in employment, part-time employment, gender pay gap in unadjusted form and disability employment gap.

The JRC report discusses four further inequality approaches, neither of them being represented in the form of an indicator in the SSB: the equalities of opportunities approach, the capabilities approach, the social mobility approach (distinguishing between intergenerational and intragenerational mobility) and the discriminatory norms, attitudes and practices approach (Alberti et al., 2021: 12-17).

Based on these six approaches, the report itself proposes a large set of indicators (EU MIMF indicators, 346 in total) recommended to monitor inequalities in Europe across countries (but not over time – figures for the latest available year are provided). Most of these suggested metrics are horizontal measures (303 in total out of the 346 indicators). The discriminatory norms, attitudes and practices approach is represented by 14 indicators, the vertical inequality and inequalities in opportunities approach both by 13 measures, while the intergenerational mobility approach by only 3 indicators. No metrics based on the capabilities approach are part of the EU MIMF.

3.2.2 Social policy indicators

When thinking about social policy indicators, there are a number of approaches to be followed, based on which aspect of policy one wishes to measure (Eneroth et al., 2019). One distinction can be made according to whether an indicator measures *input*, such as indicators based on public expenditure, *output*, such as enrolment or beneficiary rates or *outcome*. As far as the latter is concerned, there are those that measure distributive impacts of public expenditure, ones that are based on the social rights approach and those that measure what citizens *de facto* receive as a result of policy (Eneroth et al., 2019). This subchapter describes these approaches and assesses to what extent indicators belonging to either one of them can be found in the revised SSB, which includes 8 social policy indicators in total.

Input and output indicators: indicators based on public expenditure, enrolment or beneficiary rates

In order for it to be possible to analyse the impact of social policy thoroughly, it is necessary to examine indicators from various stages of the distributive process. On the one hand, there are input indicators which are based on countries' legislative frameworks and show the types and amounts of benefits people should receive in principle (Eneroth et al., 2019: 6). A part of

this are indicators based on public expenditure and beneficiary rates (based on eligibility criteria). In the SSB, there are three indicators representing the former type: *general government expenditure* in the case of *social protection, healthcare* and *education*. However, there are no beneficiary rate measures included. An additional input indicator in the Scoreboard is *out-of-pocket expenditure on healthcare* which is meant to indicate how much individuals/households spend on health services beyond public health insurance schemes in a given country.

On the other hand, a possible critique regarding input indicators is that they are unable to reflect the „real-life“ situation and only focus on what the system looks like in theory (Eneroth et al., 2019: 6). This is why it is beneficial to also examine output indicators which measure actual enrolment rates, for example. These numbers can be quite different from eligibility rates as we know that not everyone who is entitled to a certain benefit actually claims it as well (Eneroth et al., 2019: 6). In general, it can be stated that the more benefits and services target those with low income, the bigger problems of incomplete take-up the system has to face (Hernanz et al., 2004). The share of *children aged less than 3 years in formal child care* is the only social policy output indicator in the SSB.

Obviously, input and output indicators are not able to reflect on the results or effects of the given phenomena regarding the target group, which would require the use of outcome indicators for better monitoring. In the following, we focus on these latter measures that are represented in the Scoreboard by indicators such as *impact of social transfers (other than pensions) on poverty reduction*, the *self-reported unmet need for medical care rate*, as well as the *aggregate replacement ratio for pensions*.

Distributive impacts of public expenditure

Take-up rates may somewhat indicate the efficiency of the legislative framework, but it is even more important to be able to see what the actual distributive impacts of social policy are. This can be done via looking at income distribution data (available from socio-economic surveys), aggregating benefit income data to the national level and then comparing the income distribution before and after receiving benefits (Eneroth et al., 2019: 6-7). This way, we can directly see the effect of redistributive efforts on reducing differences in income levels. As Eneroth et al. (2019: 7) note, „this basic logic of analysing the distribution of income at various stages of the income formation process can be applied to various statistics, including poverty headcounts and gaps, as well as different inequality indices – for the population as a whole or for specific subgroups“. In the Scoreboard, the only indicator that follows this principle is the *impact of social transfers (other than pensions) on poverty reduction* measure, calculated by comparing at-risk-of poverty rates before social transfers with those after transfers.

Social rights-based indicators vs. what do citizens de facto receive

What is also important to mention when it comes to social policy indicators, especially in relation to the concept of social citizenship, is social rights-based indicators. These reflect the principles that underlie policy making and thus, provide valuable information regarding considerations underlying social policy measures (Eneroth et al., 2019: 6). The *self-reported unmet need for medical care rate* in the Scoreboard is an example of such an indicator, measuring a person’s own assessment of whether he or she needed medical examination or treatment (dental care excluded), but did not have it or did not seek it. Further examples are

indicators dealing with minimum income protection schemes, e.g. those included in the CSB-MIPI or the SPIN dataset.¹⁰

However, while social rights indicators are very useful and comparable over time and across countries, they usually capture policy and institutional design, that is, they focus on *de jure* rights and not on what citizens *de facto* receive as a result of social policy (Eneroth et al., 2019: 6). An indicator which focuses on the latter aspect of the redistribution process is, for example, the *aggregate replacement ratio for pensions* in the Scoreboard, indicating the gross median individual pension income of the population aged 65–74 in a given country relative to gross median individual earnings from work of the population aged 50–59, excluding other social benefits).

3.2.3 Applying the pan-European concept of social citizenship

Another aspect which is important to take into account when thinking about improving the SSB is how we can measure different dimensions of social citizenship when it is conceptualized at the EU-level. When doing so, we can employ both relative and absolute measures. Below are some considerations regarding measures relating to the security dimension of social citizenship (command over resources needed to pursue a decent life).

There are indicators of the SSB that are based on the absolute concept of poverty. The definitions of these measures include a threshold which is the same irrespective of the country we consider. For example, in the case of the *material deprivation rate*, the threshold is defined as the lack of at least 3 items out of the 9 considered. 4 out of the same 9 items is the threshold for the *severe material deprivation rate*, which was part of a composite indicator used to monitor the poverty and social exclusion target of the EU2020 strategy. These measures have been replaced recently by the *severe material and social deprivation rate* for the poverty and social exclusion target for the Europe 2030 strategy which is now included in the revised SSB (accepted by the European Commission in 2021) as well. This measure was adopted in 2017 by the European Union.¹¹ This makes it possible to have a common standard across member states according to which they can be compared, based on an idea about a universal minimum standard of living which is independent from the country context. Other similar indicators being part of the revised Scoreboard are *severe housing deprivation* and *persons living in very low work intensity households*.

However, the European-level concept of social citizenship can be measured through relative indicators, too. Usually, the benchmarks we employ to measure poverty and social exclusion against are set at the country level. This is due to the fact that most social policy decisions are taken and resources are concentrated on the national level (Gábos, Tomka and Tóth, 2021: 4). For example, in the case of the most widely used relative measure in this field, the at-risk-of-poverty rate, the poverty threshold (e.g. at 60 percent of the national median income) is drawn at national level, and we compare the share of people with incomes below the poverty line across countries. However, naturally, these poverty lines (may strongly) differ across

¹⁰ For more information on CBS-MIPI, visit <https://tingoedeme.com/tools/csb-minimum-income-protection/>

¹¹ The analytical framework remained largely unchanged, but the number and types of items were extended (Guio, Gordon and Marlier, 2012). In its final form, the indicators include 13 deprivation items (6 related to the adult individual and 7 related to the household): the threshold for material and social deprivation rate consists of 5 items, while the severe material and social deprivation rate consists of 7 items.

countries as there are major differences in standards of living across member states. Therefore, someone who counts as poor in Sweden, for example, has, on average, a very different quality of life than someone living below the poverty line in Bulgaria.

Moreover, if we consider that the European Union aspires to coordinate member states' efforts in the field and a European social citizenship concept can be envisaged, at least as a long-term view, it is worthwhile to also examine the incidence of poverty on a European level. One way to do this is to think of Europe as if it was a single society and construct benchmarks for the whole population (Gábos, Tomka and Tóth, 2021). After calculating a pan-European poverty line, it becomes possible to construct an EU at-risk-of-poverty rate (calculated in the same way as national AROP rates, only by taking the EU median income as a basis) or an EU-wide relative median poverty gap. This is all the more useful as with the help of these measures, (in)adequacy of resources and inequalities across countries can be examined more effectively and the target group of EU-level policy-making can be identified more easily.

What does the empirical evidence tell us in this respect? In line with the expectations and as shown by Gábos, Tomka and Tóth (2021), comparing national-level and EU-level poverty rates shows huge differences across countries in terms of the share of people at risk. For example, the share of persons living from incomes below the EU poverty threshold is less than 3 percent in Switzerland and around 5 percent in Norway, Finland, France, Luxembourg, and Denmark (Gábos, Tomka and Tóth, 2021: 13). In contrast, in CEE countries, the rates are much higher: the share of people at risk of poverty exceeds 70 percent in Bulgaria and Hungary and reaches around 95 percent in Serbia and Romania (Gábos, Tomka and Tóth, 2021: 13). Another indicator, the EU relative median poverty gap which measures the depth of poverty, shows great variation among countries as well. Countries in which people living at risk of poverty fall short of the European poverty threshold the most are Serbia and Romania (both around 60 percent) (Gábos, Tomka and Tóth, 2021: 14). The lowest poverty gaps can be found in Finland and Ireland (around 15 percent) (Gábos, Tomka and Tóth, 2021: 14).

4 Multidimensional well-being approach

The objective of this analysis is to discuss about the potentialities of combining the use of a social indicators dashboard (namely the above mentioned SSB) with the elaboration of a composite multidimensional indicator. We will thus develop a multidimensional synthesis indicator (MSI) by applying the procedure proposed by Mauro, Biggeri and Maggino (2018). This procedure has been already applied in different micro and macro contexts, such as measuring the social performance of financial institutions, child multi-dimensional wellbeing, human development, multi-dimensional poverty, SDGs tracking etc. (Bellucci et al. 2021; Biggeri and Ferrone 2021a; Biggeri and Ferrone 2021b; Bortolotti and Mauro 2020; Biggeri et al. 2019; Biggeri and Mauro 2018,). More precisely, here the MSI approach will be applied to the SSB indicators (see Subsection 4.2) for the EU27 countries + Norway + Switzerland + Iceland +UK in order to compute a composite European Social Rights Indicator (ESRI).

This part of the deliverable is structured as follows: after this introduction, a methodological section introduces the MSI and the related properties (Subsection 4.1). Subsection 4.2 presents the dataset used for the elaboration of the composite index. Subsection 4.3

introduces further elaborations and sensitivity checks. The last subsection summarises the main findings.

4.1 Methodology

MSI is an approach used to aggregate multidimensional phenomena and to rank units performances (countries, households, enterprises etc.). Mauro, Biggeri and Maggino have introduced this method in their 2018 paper on Social Indicators Research journal (Mauro, Biggeri and Maggino, 2018). The MSI is coherent with a formative approach to the synthesis of indicators: basic indicators are thus conceived as components contributing to define a phenomenon summarized by the composite indicator (Maggino, 2017)¹².

Using composite indicators requires to deal with heterogeneity and substitutability as, in principle, different values of the different composite indicators components may led to the same composite score. The way a composite index deals with substitutability is linked to the method identified to aggregate different dimensions. As an example, arithmetic mean assumes perfect substitutability among dimensions: it means that, once the values of the different dimensions are expressed as standardized scores, proportionally higher values in one dimension can always offset low values in other dimensions regardless how low they are. The geometric mean assumes that the closer you are to zero in one dimension, the higher is the value needed in other dimensions to offset the low performance. In case the value is zero in at least one dimension, no compensation will be possible, and the value of the aggregate index will collapse to zero. In the case of MSI, the degree of substitutability between dimensions is defined by a function of the unit's score.

Let X be the $N \times K$ data matrix, where K is the number of dimensions and N is the number observations (i.e. number of countries [C] * number of years[T]). We define the generic entry x_{itk} as the achievement for country i in year t in dimension k .

Focusing on our main objective (i.e. the estimation of ESRI through the application of the MSI procedure), the ESRI score is given by:

$$ESRI_i = 1 - \left[\frac{1}{K} \sum_j (1 - x_{itk})^{g(x_{it})} \right]^{\frac{1}{g(x_{it})}} \quad (1)$$

where K is the total number of dimensions covered by the SSB and $g(x_{it})$ is a generic real-valued function of the it -th row of matrix X , with $g(.) \geq 1$.

In other words, following Mauro et al. (2018), the function $g(.)$ allows a high degree of flexibility of the MSI procedure: so doing it is possible to deal with the substitutability issue by escaping both from the perfect substitutability assumption and from the undesirable tendency to collapse to zero linked to the use of the geometric mean (Klugman et al 2011;

¹² The other possible approach is the reflective model where basic indicators are seen as visible onsets of a latent non-directly measurable variable (Maggino, 2017).

Tarabusi and Guarini 2016). Here, the degree of substitutability can be directly linked to the general level of performance of the country through the non-constant function $g(\cdot)$.

The broad story is that, in principle, the MSI approach penalizes heterogeneity in achievements but the higher the level of performance the lower the level of penalization. As a matter of fact, high heterogeneity combined with low level of performance is heavily penalized: given the instrumental value of most dimensions, this means that a sharp deprivation in a specific dimension might not only cause an overall low performance (intrinsic value), but also negatively affects the overall outcome of the country as well. On the contrary, high heterogeneity combined with a high level of performance may be linked to countries legitimate priorities: the heterogeneity associated with their achievements is more likely to be the result of a subjective choice.

There is no upper limit to the flexibility of function $g(\cdot)$. Further information (or assumptions) on the structure of substitutability rates related to the countries can lead to more detailed and complex reiterations of the functional form of $g(\cdot)$. As suggested by Bourguignon and Chakravarty (2003) we use the MSI average, μ , as the function $g(\cdot)$.

Therefore, a generic choice for the function $g(\cdot)$ is:

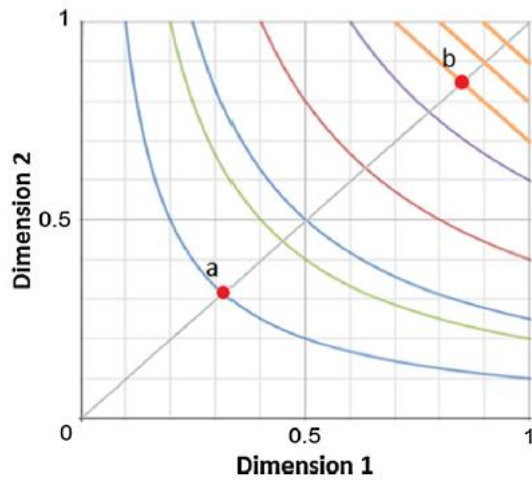
$$g(x_i) = \begin{cases} \frac{b}{a} & \text{if } \mu < a \\ \frac{b}{\mu} & \text{if } a \leq \mu < b \\ 1 & \text{if } \mu \geq b \end{cases}$$

where μ is the arithmetic mean of x_{it} and $0 \leq a < b \leq 1$ are two thresholds selected so that all units above b (or below a) have their achievements aggregated under the assumption of a perfect (or almost complementary) substitutability rate (see an example in Figure 1). In our case $a = 0$ and $b = 1$.

Figure 1 provides a simplified representation of what has just been described.

We have two dimensions (D2 on the vertical and D1 on the horizontal axes) and two fixed parameters a and b . Each iso-performance curve represents the infinite combinations of achievements D1 and D2 that result in the same level of MSI. The lower the curve, the lower the associated MSI score. The figure shows that as a unit achieves better results (top right area) and approaches b , the curves tend to linearity (Mauro et al 2018). On the opposite, units with a low overall level (bottom left area) lie on higher-degree curves that penalize their MSI score. As a result, the degree of substitutability moves from almost perfect complements (i.e. close to 0 where the level of performance is the lowest)) to perfect substitutes when it becomes linear at the upper right corner of the graph.

Figure 1: Geometric representation of the MSI with generic a and b



Source: Mauro et al. (2018).

The MSI helps overcoming the “inescapable arbitrariness” linked to the choice of the order of the mean α used to aggregate different dimensions (Anand and Sen, 1997): in the MSI, α is not a constant but is expressed as a function $g(\cdot)$. At the same time, the MSI still maintains some elements of subjectivity in the choice of the functional form of $g(\cdot)$ or its parameters allowing for a transparent understanding of the crucial dynamics of the synthesis.

In its basic form, the degree of substitutability between dimensions is defined by a function whose argument is the simple mean of the relevant dimensions: in our case, the argument of $g(\cdot)$ is the arithmetic mean of the different SSB dimensions. A possible extension of MSI is to use other indicators as argument of $g(\cdot)$. For example, the substitutability among different dimensions could be allowed to change according to other variables that representative¹³ of the sustainable human development framework¹⁴ (Pelenc et al., 2013).

4.2 Data

In 2017 the European Pillar of Social Rights has been proclaimed by the European Parliament, the Council and the Commission. As previously declared by the President of the European Commission¹⁵, the aim of the Pillar is to consider European workers and their evolving realities, serving as a reference guide for a renewed upward socio-economic convergence within the European Union. The implementation of the European Pillar, conceived at both

¹³ We considered growth, equity, sustainability and participation.

¹⁴ Following Pelenc et al. (2013, p. 91), sustainable human development is defined as “*development that guarantees both present and future generations an improvement of their capabilities that takes into account the active contribution of each human being to habitat conservation and the right of each to benefit from essential ecosystem services, through the aspiration to equity on the one hand — by the intra-generational distribution of these capabilities — and their transmission across generations on the other*”

¹⁵ https://ec.europa.eu/info/publications/state-union-2015-european-commission-president-jean-claude-juncker_en

Union level and Member State level is intended to contribute towards fair and well-functioning labour markets and welfare systems in Europe. 20 principles are enshrined in the European Pillar¹⁶, and the SSB represents the list of indicators aimed to monitor the implementation of these principles. The structure of the SSB reflects three key dimensions in the field of employment and social policies which are outlined in the European Pillar. First, the dimension of “Equal opportunities and access to the labour market” concerns with skills development, life-long learning, and active support for employment¹⁷. Second, the dimension of “Fair working conditions” relates to an adequate and reliable balance of rights and obligations between workers and employers and it considers evenness between flexibility and security to facilitate job creation, job take-up and the adaptability of firms, and promoting social dialogue. Third, the dimension of “Social protection and inclusion” takes into account access to health, social protection benefits and high-quality services, including childcare, healthcare and long-term care. Each of these three dimensions contains several policy domains related to different principles: consistently with the structure of the Pillar, most of the 20 principles are represented by at least one indicator. After the first list of indicators published in 2017, a renewed list has been included in the new Action Plan presented by the European Commission in March 2021. Currently, the headline indicators have received the endorsement of the Ministers of Employment and Social Affairs of the European Union, while the renewed list of secondary indicators is still under discussion.

In this paper, we used data from the SSB¹⁸ and integrated them with updated data from EUROSTAT¹⁹ on single SSB indicators.

Since not all SSB indicators are suitable for our analysis, we excluded some of them due to different reasons. First, indicators presenting poor data availability, such as those related to students’ performance, have not been included. Second, some indicators have been excluded for conceptual reasons: both the theoretical approach and the methodology require that indicators within the same domain measure the same underlying construct (i.e., they can be thought as substitutes). Differently, some domains tend to complement each other, measuring different aspects of the final construct. As a consequence, we decided to exclude from the analysis input indicators such as expenditures in social protection, health, and education. Indeed, while these indicators are suited for a dashboard approach, the construction of a composite index requires more careful considerations, and including inputs such as government expenditures is likely to distort the underlying coherence of the dimension. Moreover, we considered AROPE as well as AROP for children in the analysis, while single

¹⁶ The 20 principles of the pillar include: Education, training and life-long learning; Gender equality; Equal opportunities; Active support to employment; Secure and adaptable employment; Wages; Information about employment conditions and protection in case of dismissals; Social dialogue and involvement of workers; Work-life balance; Healthy, safe and well-adapted work environment and data protection; Childcare and support to children; Social protection; Unemployment benefits; Minimum income; Old age income and pensions; Health care; Inclusion of people with disabilities; Long-term care; Housing and assistance for the homeless; Access to essential services.

¹⁷ These are indeed considered as essential elements to increase employment opportunities, facilitate transitions between different employment statuses and improve the employability of individuals.

¹⁸ Data from the Social Scoreboard were downloaded on 1 July 2021 at the following link:

<https://composite-indicators.jrc.ec.europa.eu/social-scoreboard>

¹⁹ Updated data from EUROSTAT were downloaded on 2 August 2021 at the following link:

<https://ec.europa.eu/eurostat/web/european-pillar-of-social-rights/indicators/social-scoreboard-indicators>

indicators representing components of AROPE were excluded to prevent double counting. Finally, the indicator of healthy life is used in its aggregate form, instead of using two indicators disaggregated by gender²⁰.

Some indicators with data available only in a limited time interval were included only in a second version of the index; these indicators include child poverty and deprivation, disability gap, and digital skills. In the second version of the index AROP is substituted with the AROPE for consistency with other indicators.

Table 2 reports the main descriptive statistics of considered indicators. The list of domains and indicators for each of the three dimensions is reported in Table 3. Domains here correspond to the policy areas as identified in the original version of the SSB.

Table 2: List of domains and indicators

EQUAL OPPORTUNITIES			
Education, skills and lifelong learning	Headline Indicators	Early leavers from education and training <i>% of population 18-24</i>	Included only in the second version of the index
		Individuals who have basic or above basic overall digital skills <i>% of population 16-74</i>	
	Secondary Indicators	Adult participation in learning <i>% of population 25-64</i>	
		Tertiary education attainment <i>% of population 30-34</i>	
Gender equality in the labour market	Headline Indicators	Gender employment gap <i>Percentage points</i>	
	Secondary Indicators	Gender gap in part-time employment <i>percentage points</i>	
		Gender pay gap in unadjusted form <i>% of average gross hourly earnings of men</i>	
Inequality and upward mobility	Headline Indicators	Income inequality - quintile share ratio (S80/S20) <i>Ratio</i>	
Youth	Headline Indicators	Young people neither in employment nor in education and training (NEET) <i>% of population 15-29</i>	
FAIR WORKING CONDITIONS			
Labour force structure	Headline Indicators	Employment rate <i>% of population 20-64</i>	
		Unemployment rate <i>% of labour force 15-74</i>	
	Secondary Indicators	Youth unemployment rate <i>% of labour force 15-24</i>	

²⁰ By construction the two indicators disaggregated by gender would result into an aggregated average, thus removing gender differential in the final index.

		Activity rate % of population 15-64	
Labour Market Dynamics	Headline Indicators	Long term unemployment rate <i>% of labour force 15-74</i>	
	Secondary Indicators	Employment in current job by duration % of employed 20-64 from 0-11 months Transition rates from temporary to permanent contracts % (3 year average)	
Income	Headline Indicators	Real gross disposable income of households <i>Per capita increase (Index = 2008)</i>	
	Secondary Indicators	In-work-at-risk-of-poverty rate <i>% population</i>	
SOCIAL PROTECTION AND INCLUSION			
Living condition and poverty	Headline Indicators	AROPE % of population	
		AROPE Children % of population 0-17	Included only in the second version of the index
		At-risk-of-poverty-rate (AROP) % of population	Excluded because part of AROPE
		Severe material and social deprivation rate (SMSD) % of population	Excluded because part of AROPE
		Persons living in a household with a very low work intensity % of population <65	Excluded because part of AROPE
		At-risk-of-poverty-rate (AROP) for children % of population 0-17	Excluded in the second version of the index because substituted by AROPE
		Severe material and social deprivation rate (SMSD) for children % of population 0-17	Excluded because part of AROPE
		Children living in a household with a very low work intensity % of population 0-17	Excluded because part of AROPE
Secondary Indicators	Housing cost overburden % of population		
	Severe housing deprivation % of renters at market price		
Impact of public policies on reducing poverty	Headline Indicators	Impact of social transfers (other than pensions) on poverty reduction % reduction of AROP	
	Secondary Indicators	General government expenditure by function: social protection % of GDP	Excluded because it is an input indicator
		General government expenditure by function: healthcare % of GDP	Excluded because it is an input indicator

			General government expenditure by function: education % of GDP	Excluded because it is an input indicator
			Aggregate replacement ratio for pensions Ratio	
Early childhood care	Headline Indicators		Children aged less than 3 years in formal childcare % of under 3-years-olds	
Healthcare	Headline Indicators		Self-reported unmet need for medical care % of total population 16+	
	Secondary Indicators		Healthy life years at age 65: Women Years	
			Healthy life years at age 65: Men Years	
			Out-of-pocket expenditure on healthcare % of total health expenditure	
Diversity and inclusion	Headline Indicators		Disability employment gap Ratio percentage points	Included only in the second version of the index

Table 3: Indicators list and descriptive statistics (2000-2020)

	Mean	St.Dev.	Min	Max	Median
Activity rate - pop 15-65	72.39	5.53	57.60	89.30	72.50
Employment rate	70.91	6.31	52.90	87.80	71.05
Unemployment rate	8.35	4.14	2.00	27.50	7.50
Youth Unemployment rate	19.51	9.42	5.60	58.30	18.10
Share Long Term Unemployment	3.60	2.86	0.30	19.50	2.90
Transition Rate	34.21	12.21	10.00	66.70	34.90
In work at risk of poverty	7.98	3.00	2.70	19.80	7.70
Net earnings single worker without children (Annual PPS)	19,530.82	7,544.37	2,967.85	40,859.97	20,408.29
% in current job after 0-11	13.12	3.28	3.30	23.50	13.10
Pension replacement rate	0.52	0.10	0.28	0.87	0.51
Gender employment gap	11.75	6.39	-1.50	44.90	11.15
Gender gap in part-time	17.46	13.61	0.20	55.40	18.05
Gender pay gap	14.94	5.76	-0.90	30.90	15.40
Disability employment gap	25.66	7.25	11.30	46.50	24.35
AROPE rate	23.31	7.72	11.00	61.30	21.65
AROPE Children under 18	24.54	8.45	11.60	56.70	23.40
AROP Children under 18	19.25	5.51	8.30	39.30	19.50
Housing cost overburden	10.14	6.43	1.10	45.50	9.10
Housing deprivation rate - renters	10.35	9.62	0.00	53.00	6.70
Real gross disposable income - index	95.00	28.82	28.00	174.00	100.00
Income inequality (S80/S20)	4.83	1.22	3.03	11.02	4.52
Impact social transfer on poverty reduction	15.93	3.93	7.90	26.70	15.70
% of children below 3yo in formal care	28.39	17.02	0.50	78.00	28.00
% early school leavers	12.61	7.36	2.20	54.40	11.25
tertiary education achieved aged 25-34	34.19	10.64	8.80	60.60	35.10
adult participation in learning	10.87	8.12	0.90	37.30	7.90
digital skills index	56.88	13.70	26.00	86.00	55.50

Young people neither in employment	12.71	4.91	3.60	28.50	12.10
Healthy Life expectancy	62.02	4.76	50.40	75.10	62.20
Self reported unmet need for healthcare	3.16	3.25	0.00	16.40	2.00
Out of pocket expenditure for healthcare	20.90	8.78	7.89	47.74	18.91

Source: Authors' elaboration.

Indicators were standardized using the min-max approach to allow comparability across countries and over time. The minimum and maximum were chosen theoretically or from the whole distribution, to ensure comparability across countries and over time.

Indicators were aggregated into domains using the arithmetic mean, and the score of each domain is reported in the table below (Table 4).

Domains have been then combined into the three pillars using the MSI method, and the overall ESRI index has been calculated aggregating the three pillars using again the MSI. Average score for 2005-2020 are reported in Table 5.

Both Table 4 and Table 5 show moderate improvements or stability of the reported values. As an example (see Table 4), more marked improvements are identified for Education of Healthy life domains (with a score increasing from 0.47 to 0.59 and from 0.56 to 0.74 respectively). Other domains show an overall stability: the inequality domain (as an example) presents more or less the same level in 2005 and 2020 (with moderate oscillations in the middle).

Table 4: Domains EU27+NO+UK+CH+IS average (2005-2020)

	Education and skills	Gender equality in LM	Inequality	Living Standards	Youth	Labor force	Labor Market	Income	Policies	Early childhood	Healthy life
2005	0.47	0.65	0.82	0.72	0.80	0.70	0.68	0.60	0.42	0.26	0.56
2006	0.48	0.66	0.81	0.71	0.83	0.73	0.67	0.62	0.41	0.27	0.58
2007	0.49	0.66	0.81	0.71	0.85	0.75	0.68	0.63	0.41	0.26	0.60
2008	0.50	0.66	0.81	0.70	0.85	0.75	0.64	0.63	0.42	0.28	0.65
2009	0.51	0.68	0.81	0.73	0.81	0.71	0.67	0.63	0.42	0.28	0.65
2010	0.52	0.69	0.81	0.72	0.80	0.69	0.64	0.64	0.43	0.29	0.64
2011	0.53	0.69	0.81	0.72	0.75	0.69	0.61	0.64	0.45	0.29	0.64
2012	0.54	0.70	0.81	0.73	0.74	0.68	0.60	0.64	0.44	0.30	0.64
2013	0.55	0.70	0.79	0.72	0.74	0.68	0.60	0.64	0.46	0.31	0.63
2014	0.56	0.71	0.77	0.72	0.75	0.69	0.58	0.64	0.48	0.32	0.63
2015	0.57	0.71	0.76	0.72	0.76	0.71	0.58	0.64	0.48	0.32	0.64
2016	0.57	0.72	0.77	0.73	0.78	0.73	0.59	0.64	0.49	0.35	0.67
2017	0.58	0.71	0.78	0.74	0.80	0.76	0.60	0.64	0.48	0.36	0.67
2018	0.59	0.72	0.79	0.74	0.81	0.78	0.61	0.66	0.48	0.38	0.67
2019	0.59	0.72	0.79	0.77	0.82	0.80	0.64	0.65	0.47	0.39	0.70
2020	0.58	0.76	0.81	0.78	0.80	0.77	0.71	0.72	0.44	0.38	0.74

Source: Authors' elaboration.

Both ESRI and related dimensions presented a moderate upward trend. It is anyway possible to notice different shapes of the trends. In the case of Equal Opportunities and social

Protection and Inclusion the growth is more or less constant. The Labor Market dimension, on the contrary recorded a contraction after the 2008 crisis and the pre-crisis level was recovered only in 2018. In other words, the Labor Market dimension seems to be more sensitive to the overall economic performance while the other dimensions seems to be more stable and probably more influenced by policies and regulations.

Table 5: ESRI score and Dimensions EU27+NO+UK+CH+IS average by year

	ESRI	Equal Opportunities	Labor Market	Social Protection and Inclusion
2005	0.58	0.65	0.65	0.46
2006	0.59	0.67	0.66	0.47
2007	0.59	0.68	0.68	0.47
2008	0.60	0.68	0.66	0.48
2009	0.61	0.68	0.66	0.50
2010	0.60	0.68	0.66	0.50
2011	0.60	0.68	0.64	0.50
2012	0.60	0.68	0.64	0.50
2013	0.60	0.68	0.63	0.50
2014	0.60	0.69	0.63	0.51
2015	0.61	0.69	0.64	0.52
2016	0.62	0.70	0.65	0.54
2017	0.63	0.71	0.66	0.54
2018	0.64	0.72	0.68	0.55
2019	0.66	0.72	0.69	0.57
2020	0.70	0.71	0.74	0.56

Source: Authors' elaboration.

These results refer to the overall yearly average for the countries covered by this study. As will be shown in section 4.3.1, the picture become more complex when we move to country level comparisons.

4.3 Results

4.3.1 The ESRI: trends and cross-country comparisons

In the period between 2005 and 2017 most countries saw an increase in the ESRI score (Figure 2). However, this is not the case for all countries. In particular, Italy, Greece, Spain, Cyprus, and Serbia had a decrease in their aggregate score from 2005 level. In Spain, the score is better than in 2010, but still below the levels of 2005.

It is easy to see that these were among Southern Europe countries worst hit by the 2008-2009 financial crisis, the subsequent recession and implications in terms of inequality (Matsaganis and Leventi, 2014). The variation in the score is shown more clearly in Figure 3.

Figure 2: ESRI score in 2005, 2010 and 2017 by country

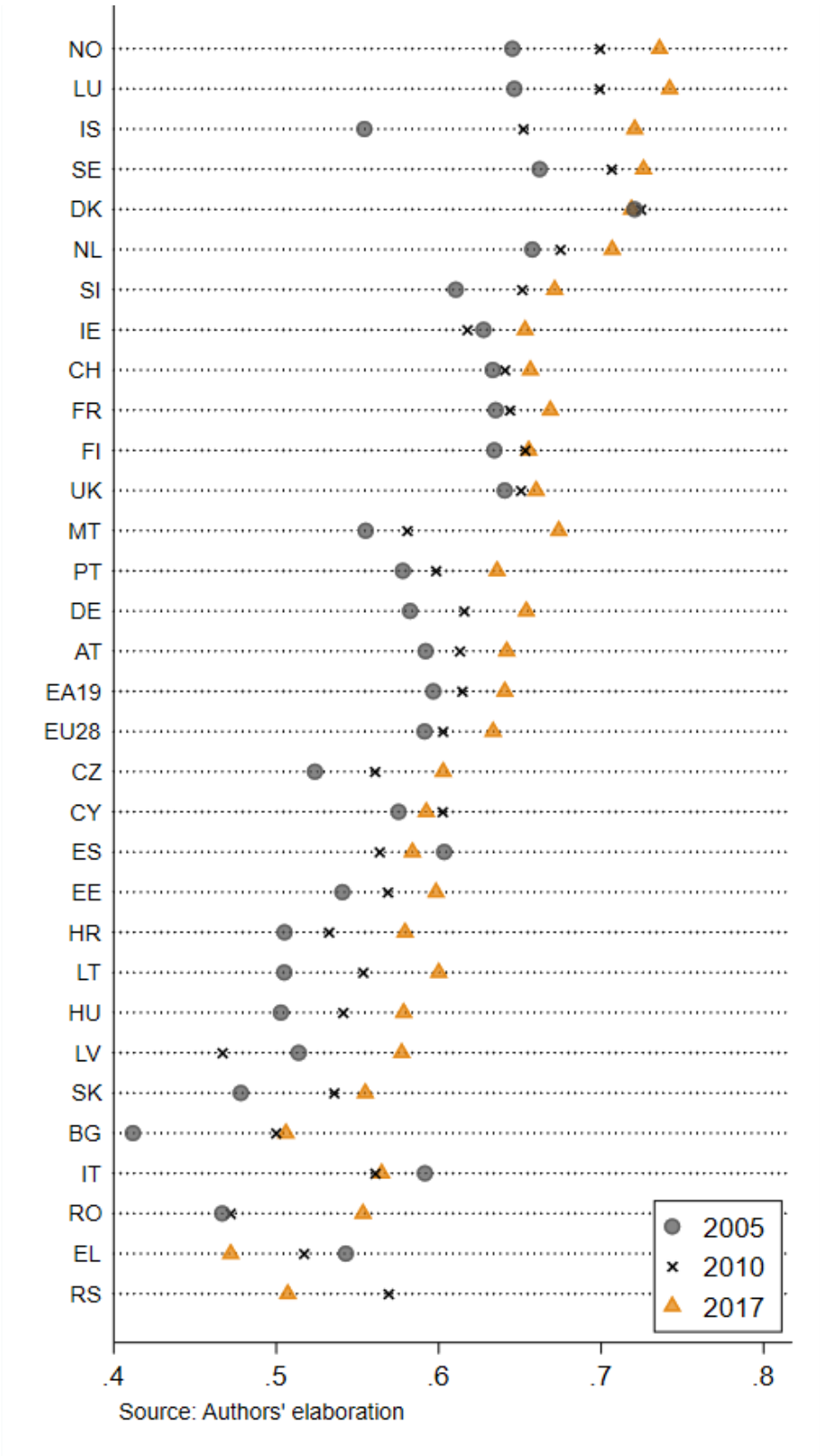


Figure 2: Percentage % in ESRI score between 2005-2010, and 2010-2017



The blue and green columns show a positive change between 2005-10 and 2010-17, respectively²¹. Most countries show a positive change in both years, in particular Romania, Latvia, Malta have made notable progress in recent years. Latvia has reversed a negative change in 2005-10 to an impressive positive one in the subsequent period. As noted, Serbia, Greece, Cyprus have seen a marked decrease in their scores. Italy shows a decrease in the first period, and a small improvement in the second, but not sufficient to catch up the losses of the 2005-2010 years.

The same dynamic can be further illustrated by the next graph (figure 4), which shows the relationship between the level of the ESRI in 2017 (on the vertical axis) and the change occurred since 2005 (on the horizontal axis), highlighting the different regions within Europe²². The vertical dashed line is the 0 and the horizontal one is the 0.5. Most countries have improved, especially Eastern European countries, although they remain at a lower score than most of central and northern-European countries. On the other hand, all the countries registering a worsening between 2005 and 2017 are southern European ones. Greece in particular has a score lower than 0.5, which is the lowest score registered among the countries represented. Among the countries showing the biggest increases since 2005 there are Iceland, Bulgaria, and Malta.

The next graph (Figure 5) shows the so-called ‘sigma convergence’: the trend of the standard deviation of the ESRI over time. If S.D. decreases between countries, then we can conclude there is convergence.

After an initial convergence between 2005 and 2006, there has been a constant increase of the S.D, and we can observe how in the aftermath of the financial crisis European countries have actually diverged. Convergence has started to appear again from 2015 on.

²¹ Some countries lack a column because scores are not available for those countries-year.

²² North Europe: Iceland, Sweden, Denmark, Norway.

Figure 3: Change of ESRI score between 2005-17 and level in 2017, by region

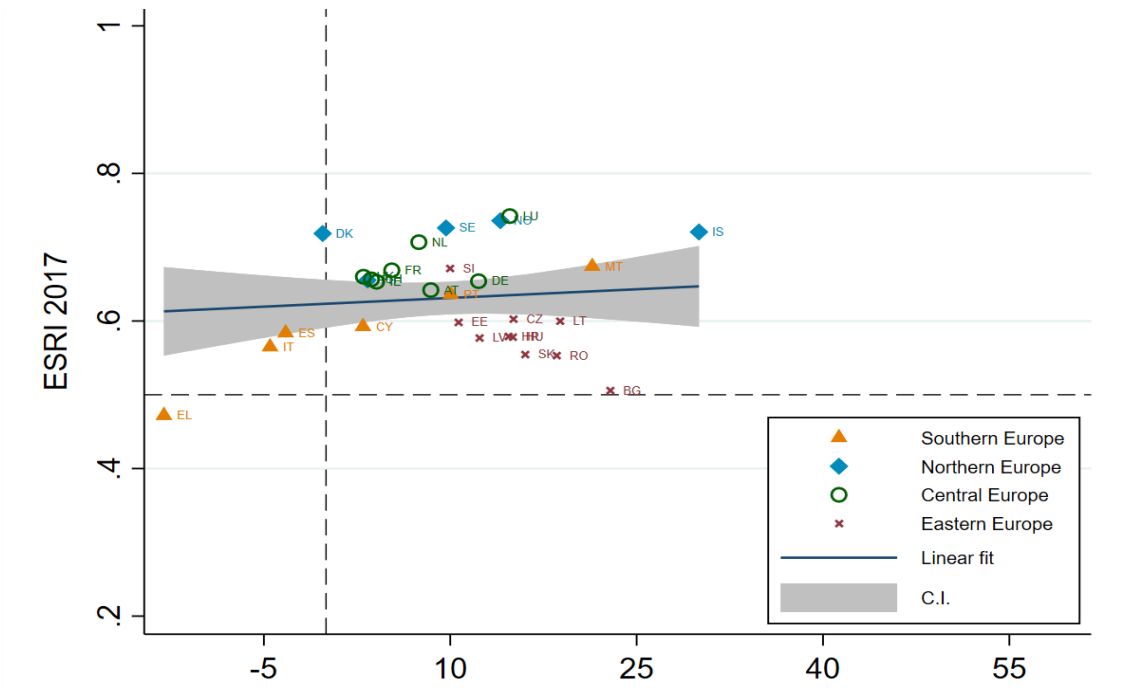
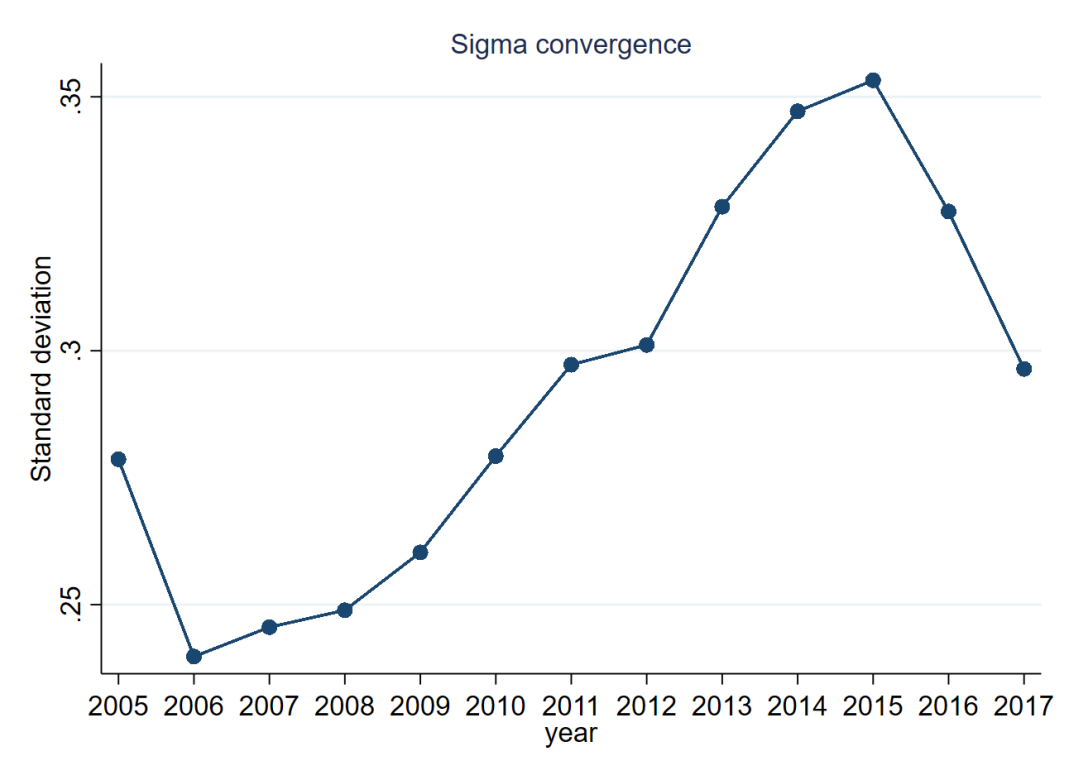


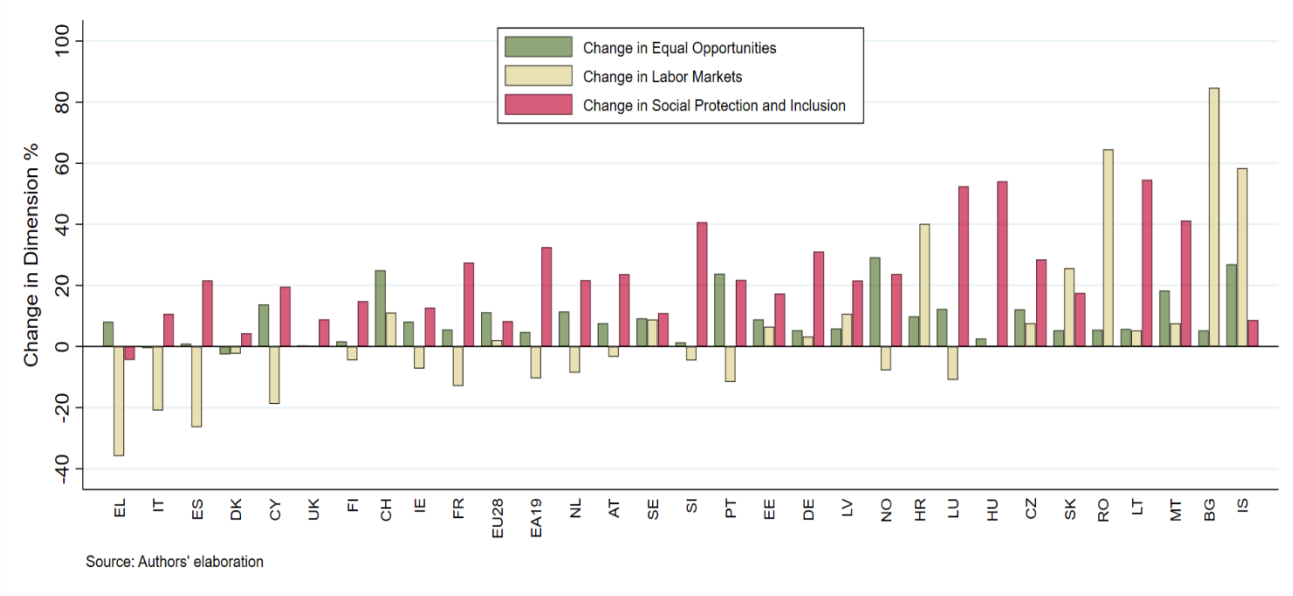
Figure 4: Convergence between countries over 2005-17



The change in ESRI has been driven mainly by the positive changes in Social Protection and Inclusion, (Figure 6) which have been strong for most countries. A few countries also show

considerable improvement in Labor markets and fair working conditions, while this is the dimension most hit for the countries that experienced a worsening of the composite score. Modest gains are also registered in the Equal Opportunities pillar.

Figure 5: Changes in dimensions between 2005 and 2017



Looking at the relationship between the three pillars, we observe that countries in general perform much better on the first pillar, equal opportunities, than in the other two.

Similarly, countries are better off in the second Pillar, labor markets and fair working conditions, rather than in Social Protection and Inclusion. The latter seems to be the most neglected Pillar of the three.

Finally, we observe the different results obtained when introducing additional variables in the three Pillars (see Figure 8): following recent changes to the SSB, we have constructed the ESRI score adding variables for children risk of poverty and social exclusion, and the disability gap: we called it ESRI+. These variables are available only for a small subset of years, therefore cannot be included in the overall analysis.

Figure 8 illustrates the differences in the final score between the two ESRI. Differences are quite small for most countries, showing that these variables do not significantly influence the overall index. Interestingly, Ireland is the only country showing a substantially lower score when considering these additional variables.

Figure 6: Comparison between Pillars- 2017

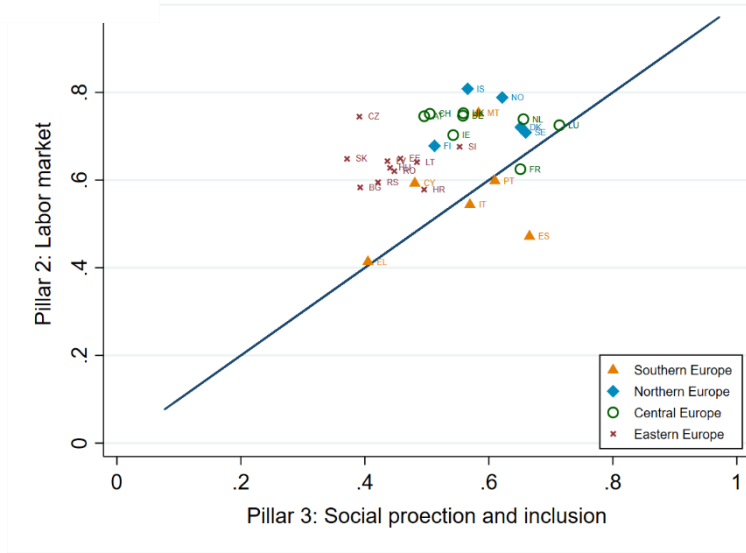
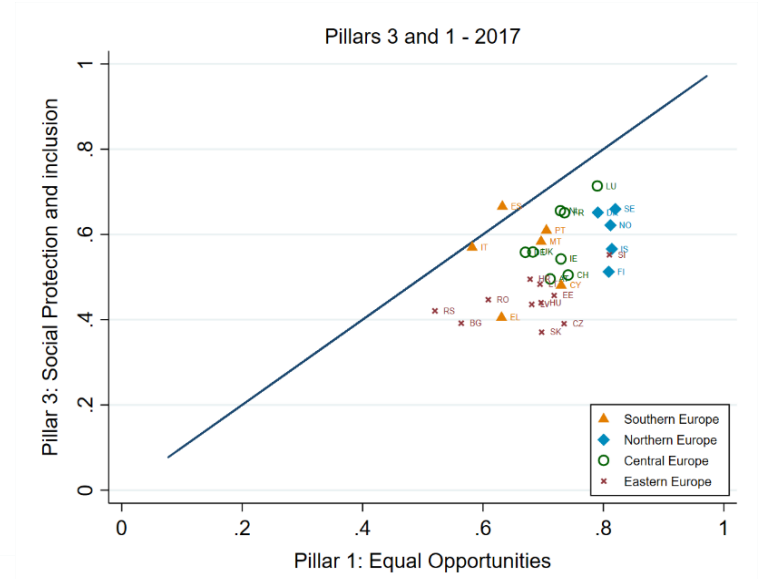
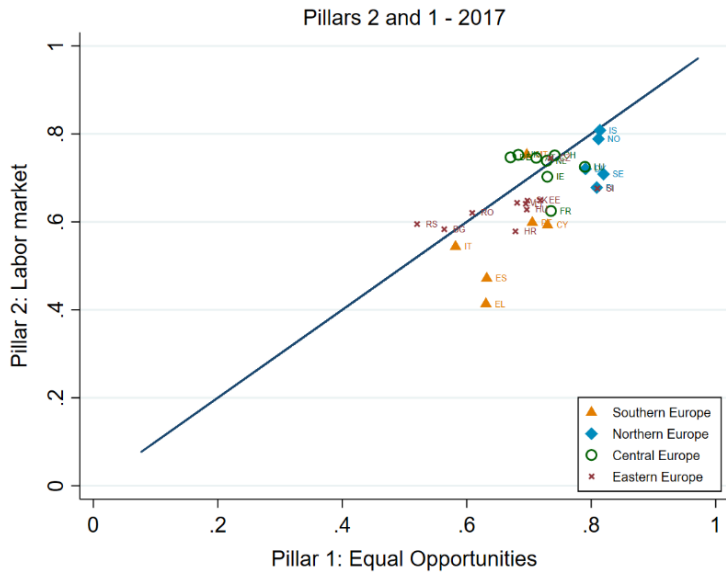
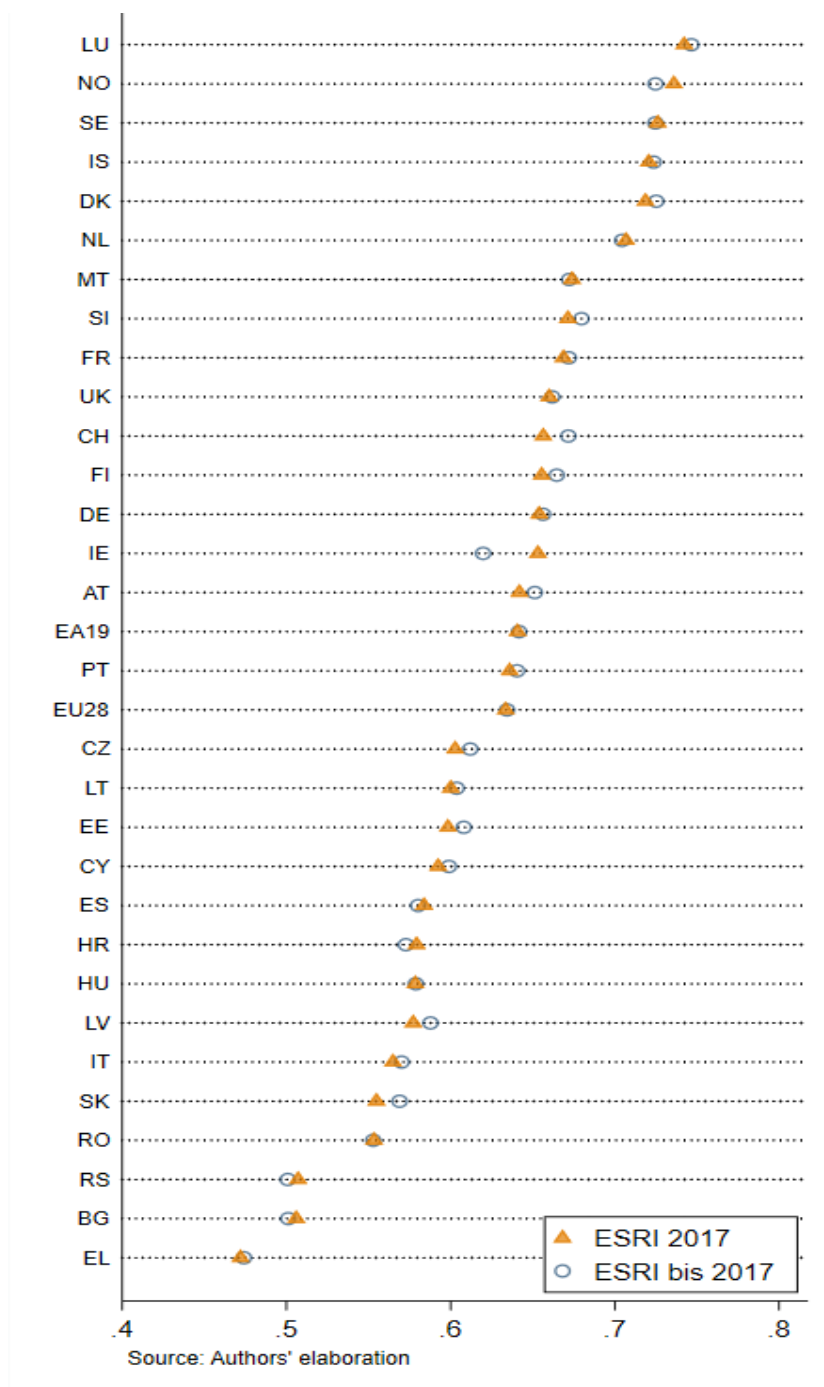


Figure 7: Comparison of ESRI and ESRI+ - 2017



4.3.2 Relationship with other human development variables

In this part we explore the relationship of the ESRI with other relevant variables of sustainable development. We focus on four main aspects of sustainability: GDP per capita (In constant 2010 USD), the Gini index, CO₂ emissions per dollar of GDP, and opportunity to participate. The variables have been chosen because they relate to different aspects of sustainable human development: economic sustainability, represented by both growth and equality, environmental sustainability, and social sustainability. The last aspect is represented by the component of ‘Equality of context index’ of the Democracy Matrix database²³. The index, standardized between 0 and 1, responds to the question: "Do citizens have equal and fair chances to participate in relevant democratic procedures, and are citizens treated equally by governmental institutions? Are equal treatment and opportunities of participation of citizens impaired by electoral violence, clientelist structures, corruption, and in particular educational inequalities?". We chose this indicator as a measure of a function participation in society and democracy.

The next figures show the relationship between the ESRI and the selected variables.

Figure 9 shows the relationship with GDP per capita. The relationship is substantially linear, with ESRI increasing with the increase of GDP per capita. For some countries, however, the relationship is not as linear. The relationship of the ESRI with the Gini Index is similarly linear, but negative: at higher inequality corresponds a lower ESRI score. However, the points are less close to the regression line, showing that the relationship with inequality is less strong than the one with GDP.

Interestingly, the relationship with CO₂ emissions is equally negative (Figure 11). We chose to use CO₂ emission per dollar of GDP per capita to have a measure of environmental efficiency, in order to capture the effort of countries towards energy efficiency and emission neutrality. We can reasonably assume European countries are similar in available technology. However, it is also important to highlight how this measure can be influenced by the sector prevalent in the economy (i.e. it is not easy to distinguish “virtuous” countries than countries who simply delocalised emission-intensive production).

The relationship with our measure of participation is positive and linear (Figure 12), although some countries (namely, Greece, Italy, and Spain) show a lower ESRI score than predicted by their participation score. On the contrary, several Nordic and central European countries report a higher score than predicted from the participation index.

²³ <https://www.democracymatrix.com/>, accessed 28 October 2021.

Figure 8: Relationship between ESRI and GDP per capita - 2017

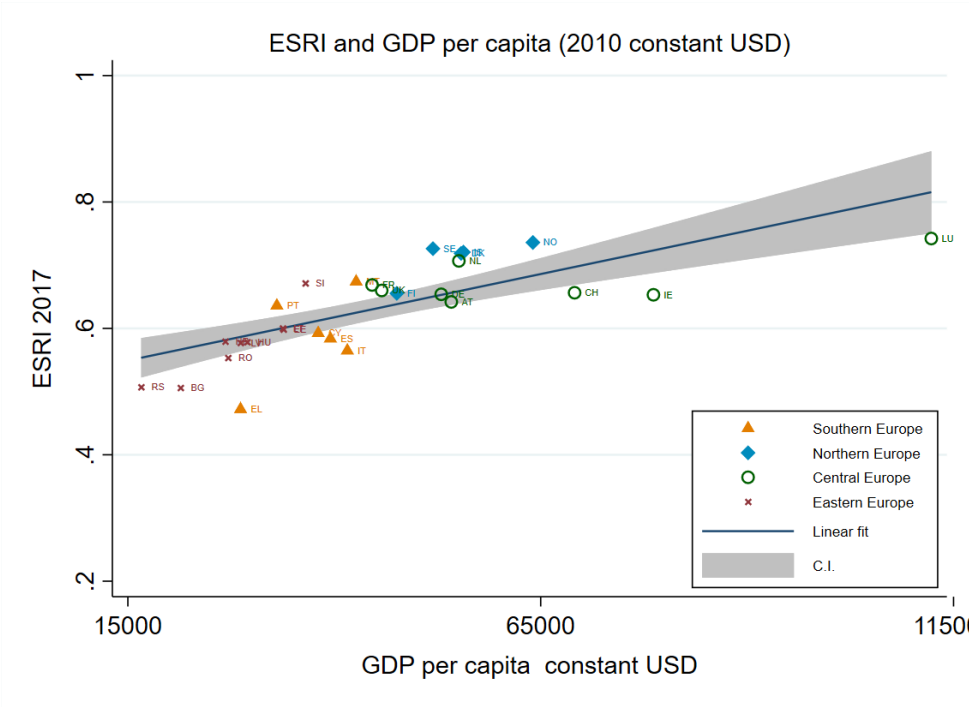


Figure 9: Relationship between ESRI and Gini index - 2017

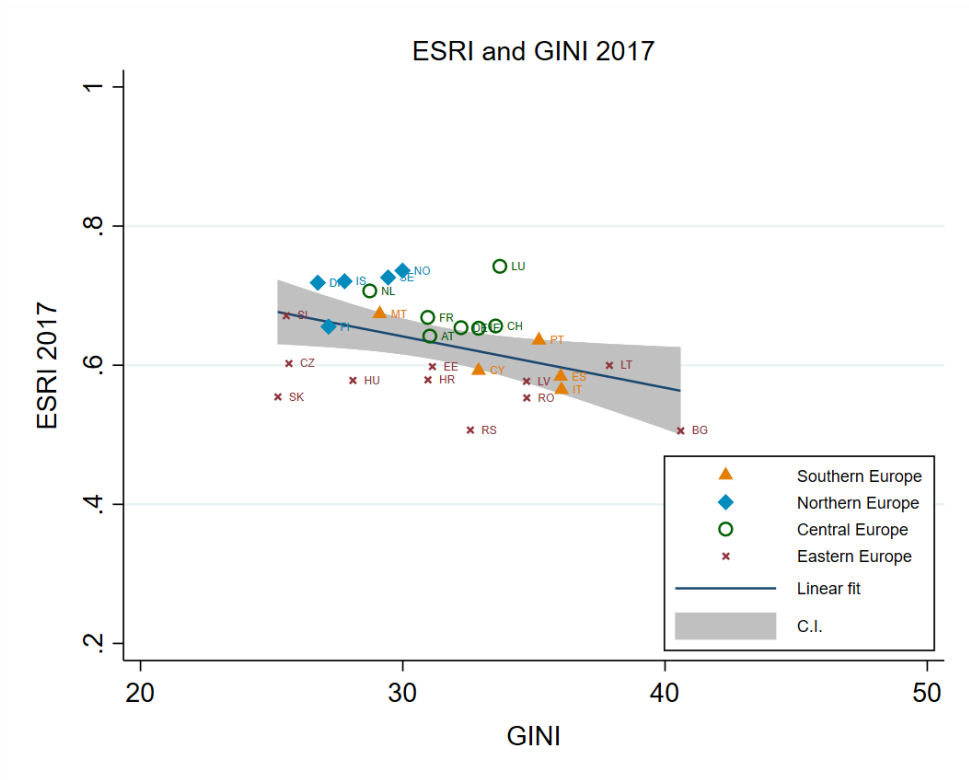


Figure 101: Relationship between ESRI and CO₂ Emissions per GDP dollar

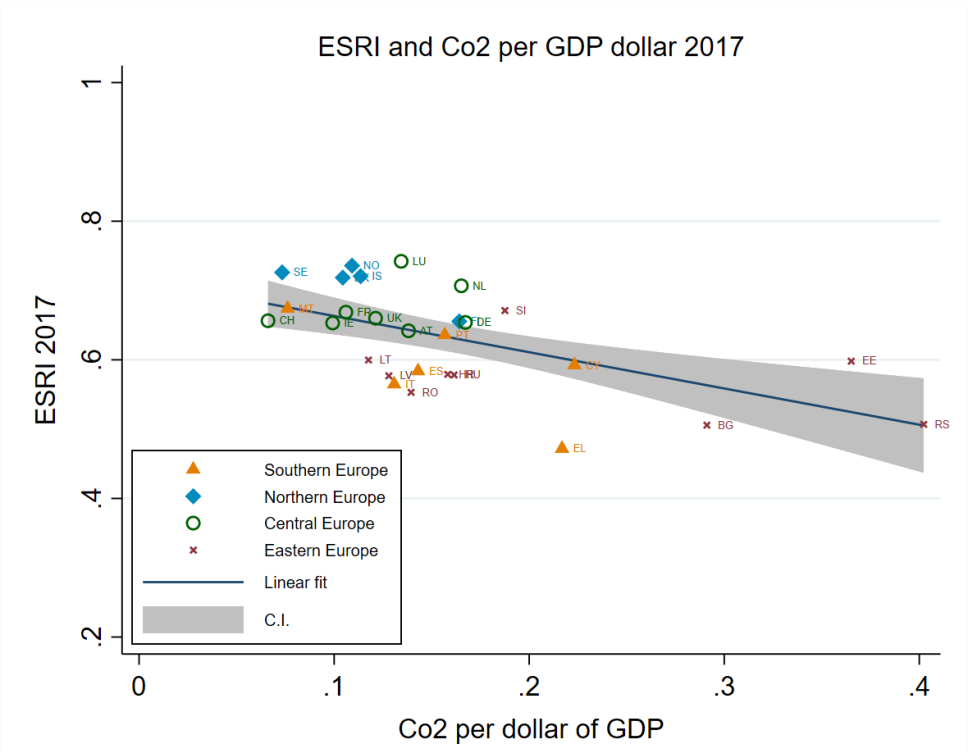
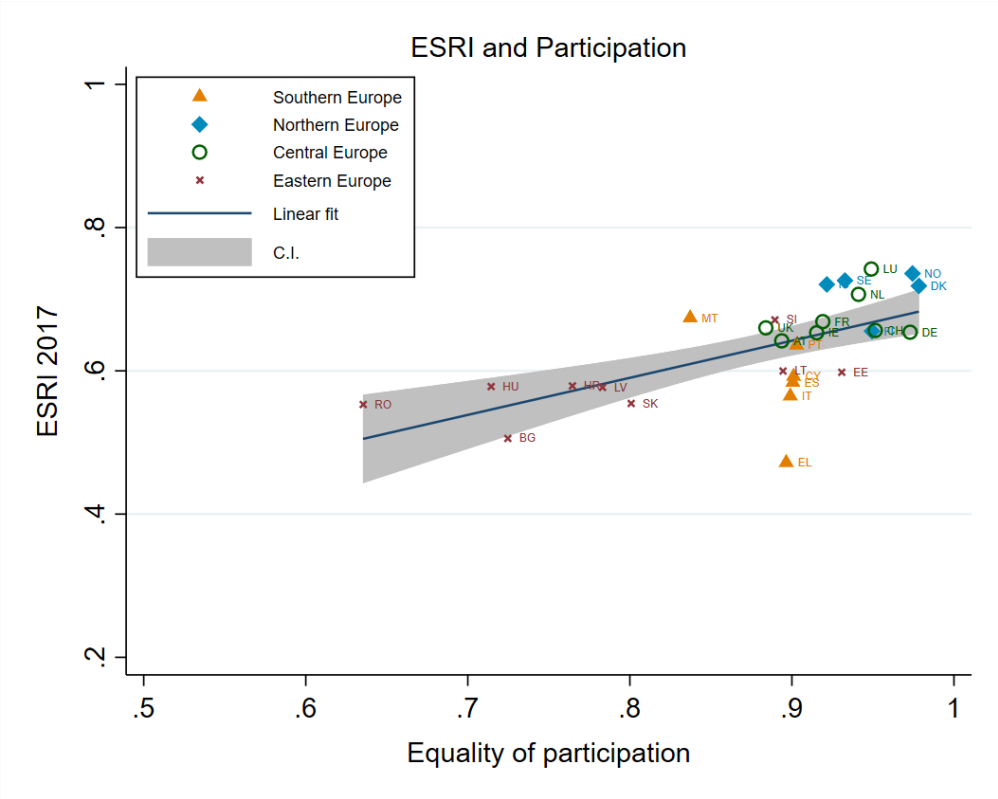


Figure 112: Relationship between ESRI and the Equality of Participation Index



The next table shows the ranking of the countries in 2017 for the ESRI score, the ESRI with the additional domains (children and inclusion indicators), the ESRI dimensions, and the four variables.

The ranking of the ESRI is dominated by Luxemburg, followed by Northern and Central Europe countries. The bottom 10 countries are mainly eastern European countries, with the notable exception of Italy, at the 27th place, and Spain, at the 23rd place. The ranking of the ESRI including the additional indicators is very similar and does not present substantial differences. However, looking at the different dimensions, we observe substantial differences in ranking. Among the first 10 countries in terms of ESRI, for example, the UK is ranked 21st in terms of equal opportunities, France is 23rd in terms of labour market dynamics and fair working conditions, while Spain, 23rd in the global league table, ranks 2nd in Social Protection and Inclusion.

When compared to the other variables, the differences are even greater. Luxemburg ranks 21st in terms of inequality, the Netherlands, 6th in place in the ESRI ranking, are 23rd in terms of emissions. Switzerland is the first country for Co2 emissions, and Slovakia and Slovenia are the first two in terms on equality.

These differences in ranking should not be surprising, for different reasons.

First, the components of the ESRI domains and dimensions are not equally distributed. Some domains and dimensions have more indicators, which implicitly weight those indicators and domains less. Second, the SSB and the Social Pillars are very oriented towards labour markets. In fact, both the first and second dimensions centre labour markets. It is therefore not surprising that countries that do well in these dimensions, or one of the two, may have lower score in the third Pillar.

The potential trade-off between dimensions is not a bug of the index, but rather a feature: if all dimensions went in the same direction, they would be redundant (i.e. substitute for each other). The goal of having a composite index is exactly to combine and balance information on different aspects, all contributing to construct the final score.

Finally, the differences with the other four variables are also expected, as they capture very different aspects of sustainable development. While GDP per capita is more clearly linked to aspects such as labour market dynamics and opportunities, the relationship with other elements of sustainable development is more complex.

The last column of the table reports an 'average ranking', which can be interpreted as more true ranking of sustainable development among European countries. The higher rank is occupied by Norway, closely followed by other Nordic countries.

We finally analyse the correlation between the ESRI and the social spending of countries. Expenditures on health, education and social protection are originally part of the SSB, but we excluded them from the index due to them being inputs, rather than outcomes. We can therefore analyse the relationship between the final score and these variables (Figures 13, 14, and 15). The relationship is linear for all types of expenditures, although with some differences. The relationship with the SP expenditures is less clear, and there is more dispersion around the interpolation line. Greece and Luxemburg remain clear outliers in terms of ESRI score.

Table 1: Ranking of countries according to different variables

Country	Ranking of European Social Rights Index	Ranking of European Social Rights Index - bis	Ranking of Equal opportunities and access to LM	Ranking of Dynamic LM and fair working conditions	Ranking of Social Protection and Inclusion	Ranking of GDP per capita	Ranking of Standardized Gini	Ranking of Co2 emission	Ranking of Equality of Participation	Average ranking
Luxembourg	1	1	7	10	1	1	21	13	6	6.8
Norway	2	3	3	2	7	4	11	7	2	4.6
Sweden	3	4	1	12	3	10	10	2	8	5.9
Iceland	4	5	2	1	13	5	6	8	10	6.0
Denmark	5	2	6	11	5	6	4	5	1	5.0
Netherlands	6	6	13	9	4	7	8	23	7	9.2
Malta	7	8	18	3	10	16	9	3	22	10.7
Slovenia	8	7	4	15	16	20	2	25	20	13.0
France	9	9	9	23	6	14	13	6	11	11.1
United Kingdom	10	12	21	4	14	12	N.A	10	21	13.0
Switzerland	11	10	8	5	19	3	20	1	4	9.0
Finland	12	11	5	14	18	11	5	22	5	11.4
Germany	13	13	26	6	15	9	16	24	3	13.9
Ireland	14	18	12	13	17	2	19	4	12	12.3
Austria	15	14	15	7	20	8	14	14	19	14.0
EA19	16	15	25	21	8	13	N.A	17	N.A	16.4
Portugal	17	16	16	25	9	23	24	19	13	18.0
EU28	18	17	22	19	11	15	N.A	18	N.A	17.1
Czechia	19	19	10	8	31	N.A	3	N.A	N.A	15.0
Lithuania	20	21	20	20	22	22	27	9	18	19.9
Estonia	21	20	14	16	24	21	15	29	9	18.8
Cyprus	22	22	11	27	23	19	19	27	14	20.4
Spain	23	24	27	31	2	18	25	16	15	20.1
Croatia	24	26	24	29	21	28	12	20	25	23.2
Hungary	25	25	19	22	26	24	7	21	27	21.8
Latvia	26	23	23	18	27	25	22	11	24	22.1

Italy	27	27	30	30	12	17	26	12	16	21.9
Slovakia	28	28	17	17	32	N.A	1	N.A	23	20.9
Romania	29	29	29	24	25	27	23	15	28	25.4
Serbia	30	31	32	26	28	30	17	30	N.A	28.0
Bulgaria	31	30	31	28	30	29	28	28	26	29.0
Greece	32	32	28	32	29	26	N.A	26	17	27.8

Source: Authors' elaboration

Figure 12: Relationship between ESRI and Health Expenditures (% of GDP) 2017

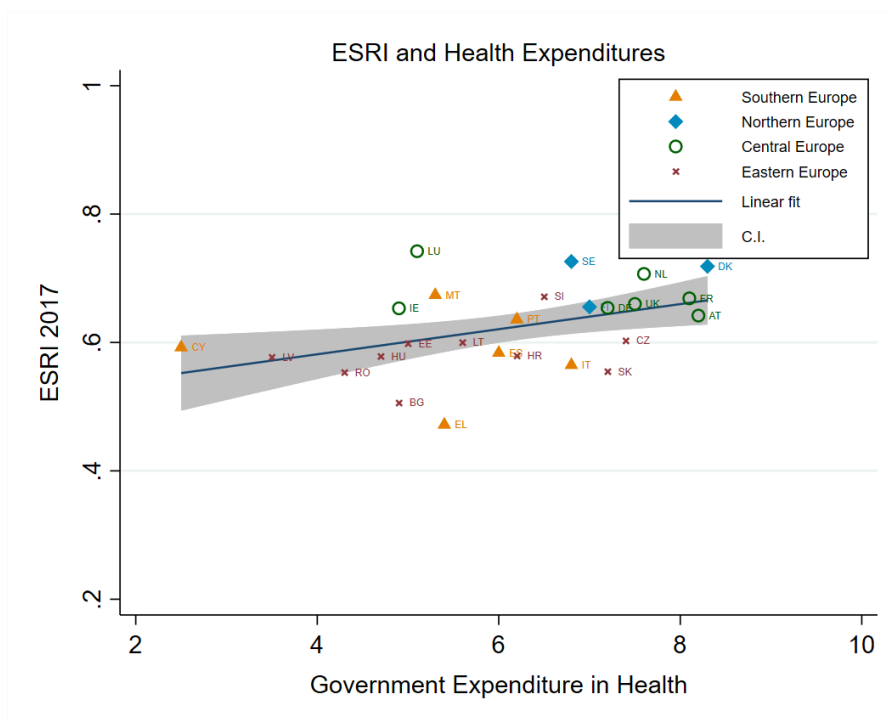


Figure 13: Relationship between ESRI and Education Expenditures (% of GDP) 2017

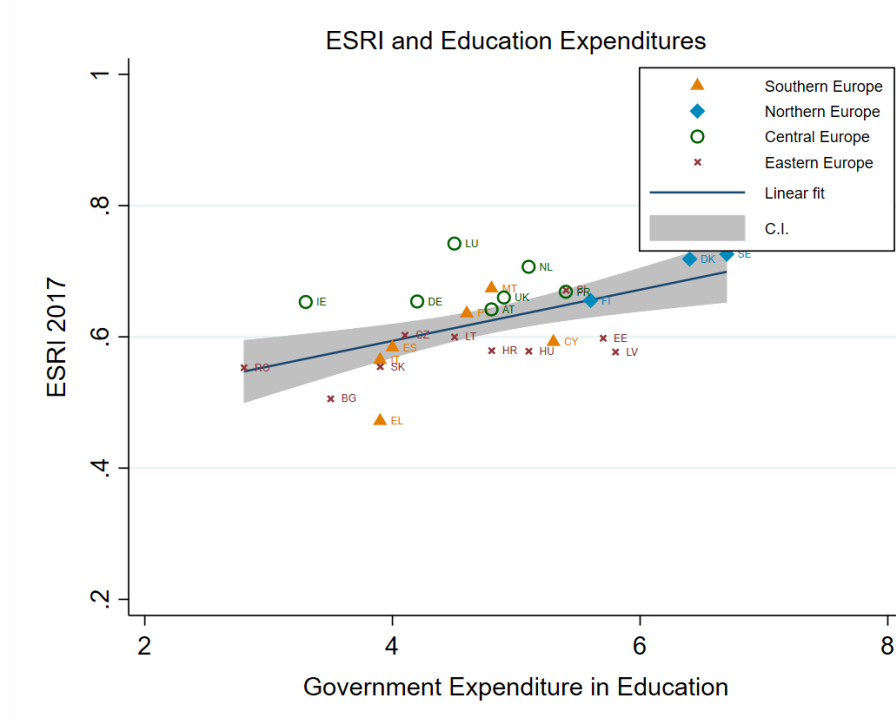
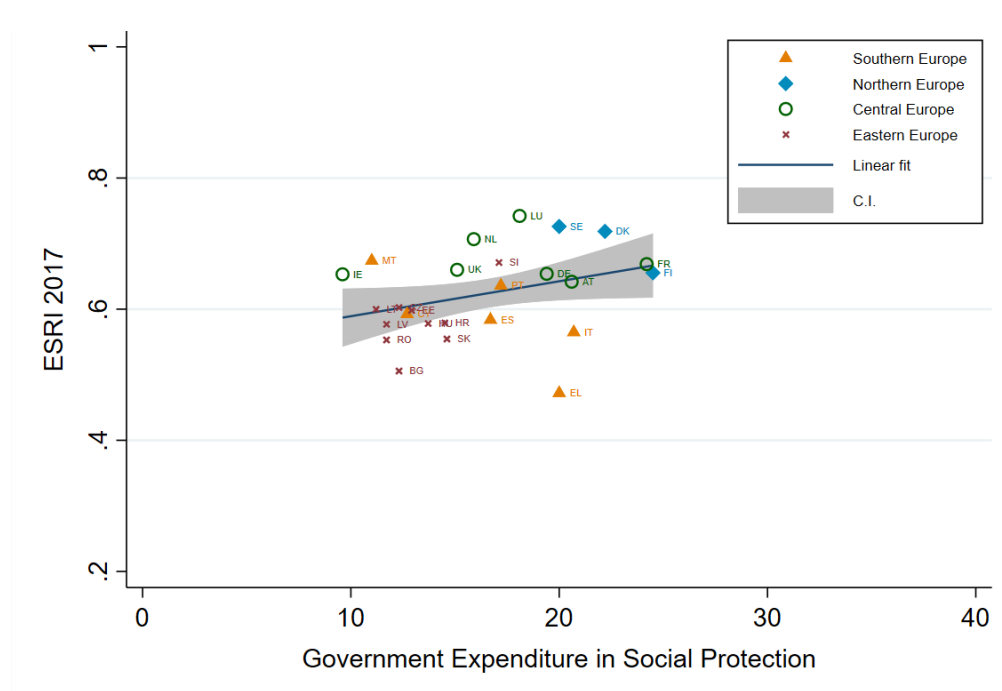


Figure 14: Relationship between ESRI and Social Protection Expenditures (% of GDP) 2017



4.4 Conclusions

The European Pillar of Social Rights is relevant for the future of the European Union: the upward social convergence of the EU seems to be a fundamental pre-requisite to build a sustainable, resilient and prosperous future for the EU. The implementation of the EPSR needs to be carefully and effectively monitored in order to analyse the evolution of the level of social rights enjoyment in the EU in real time in order to identify possible problems and provide solid policy responses.

The SSB is a valuable and indispensable tool as it provides a comprehensive standard dashboard of indicators covering all the areas embraced by the realisation of the EPSR. This is useful both to perform over-time and cross-country comparisons. Nonetheless, this paper has shown how a composite index (called ESRI) can potentially complement the dashboard of indicators by providing the opportunity of additional relevant analysis.

The ESRI was elaborated applying the MSI procedure (described in Subsection 4.2). We choose to keep the ESRI structure as close as possible to the SSB: we followed the SSB in terms of selected indicators and of structure of the synthesis procedure. This choice was driven by the purpose of maximising policy relevance building on what already officially approved by the EU.

The comparison of trends in the different countries under review shows a rather heterogeneous picture with often divergent performances. While, in most countries the index improved (with a particularly positive performance in Eastern Europe), Southern Europe is characterised by a much more problematic framework with several countries who experienced a decrease of ESRI between 2005 and 2010 with only partial recovery by 2017. Intuitively, this is might due to the asymmetric impact of 2008-2009 crisis on Southern

European countries (who were hit more heavily and who recovered more slowly). The analysis of sigma convergence seems to confirm this picture.

Concerning the ESRI components, it is possible to observe that improvements in the index are mainly driven by the social protection component while the labour market component is the main determinant of the overall bad performance of Southern Europe countries.

The comparison between ESRI and ESRI+ indexes does not identify relevant differences. In other words, the inclusion of child specific and disability specific variables within the index does not change the overall scenario. Nonetheless, a richer dashboard with more detailed indicators is a desirable innovation, as it is needed to monitor the inclusiveness of the implementation of the EPSR.

The relation between ESRI and other variables presented in subsection 4.3.2 is a teaser about possible uses of the index. More refined analyses are needed to draw more methodologically robust conclusions (e.g. the estimation of panel models). It is anyway possible to highlight some first interesting result such as the negative relation between ESRI and inequality and between the CO2 emissions and social rights.

Further developments of the proposed analysis are desirable and within reach. First, disaggregation by gender could shed light on gender related inequalities in the realisation of social rights: the gender disaggregation of main ESRI indicators is available and to compute a separated ESRI for men and women is quite straightforward.

Second, disaggregation by vulnerable groups (e.g. migrant background, disability etc.) is extremely interesting to verify that no-one is left behind in the desired process of upward social convergence. We are anyway aware that this kind of development could be limited by data availability.

The same is true for the territorial disaggregation: to compute a NUTS2 ESRI could be relevant as it could allow to identify territories whose upward social convergence is more problematic. The disaggregation of ESRI indicators at the NUTS2 level is anyway problematic as shown by the data gaps currently highlighted by EU institutions (ECR, 2019).

5 Summary

The European Pillar of Social Rights constitutes a strategic asset for the future of the European Union: the events that characterised the last years (including the Brexit and the growing mistrust toward European institutions) delineate a critical picture for the EU. To foster the upward social convergence of the EU is thus one of the main opportunities to build a sustainable, resilient and prosperous future for the EU. The social and economic consequences of the COVID pandemic add further unknowns to this already complex scenario. To effectively monitor the implementation of the EPSR is thus a relevant issue both from a scientific and a practical\political point of view.

This deliverable contributes to the debate on how to effectively promote the monitoring of the EPSR by analysing the SSB from two main point of view: firstly, by proposing strategies to improve and secondly by exploring the possibility of elaborating a composite indicator starting from the SSB dashboard.

In the first part of the paper we examined how a dashboard approach can contribute to monitoring social developments across Europe. Most importantly, we explored ways to

improve the current SSB by better relating structure to outcomes and extending the role of social rights-based indicators.

We listed key indicator types and looked at to what extent they are already present in the Scoreboard. The result was the identification of a set of possible further developments of the SSB.

First, we focused on measures of inequality and we found that the Scoreboard only includes a few of them. However, recently, the Joint Research Centre published a report proposing the Multidimensional Inequality Monitoring Framework (EU MIMF) which is aimed at broadening and deepening the scope of frameworks monitoring progress towards a more cohesive and social Europe (e.g. the SSB). The report views inequality as a multidimensional concept and so, can help in developing new inequality indicators in the case of the Scoreboard as well.

Further, social policy indicators were considered, which could serve as more direct measures of the role of welfare states in the security and the autonomy domains of the social citizenship concept. When it comes to these indicators, one distinction can be made according to whether it measures *input*, such as indicators based on public expenditure, *output*, such as enrolment or beneficiary rates or *outcome*. Focusing on the latter, there are those that measure the distributive impacts of public expenditure, ones that are based on the social rights approach and those that measure what citizens *de facto* receive as a result of policy. The presence of these indicators in the current SSB is very restricted: while eight indicators are part of it, half of them are input measures (on social expenditure).

Finally, we considered a specific aspect of the social citizenship concept: adopting a pan-European approach. Here, we discussed relative and absolute measures of poverty. While both approaches are represented in the Scoreboard to a certain extent, there is no measure which examines the incidence of poverty on a European level (as if the European Union was a single society).

The second part of the deliverable focused on the development of a composite indicator (the European Social Rights Indicator or ESRI) based on the SSB. The ESRI was developed according to the MSI procedure (Mauro et al., 2018) as carefully explained in Subsection 4.1.

In order to avoid the multiplication of approaches and indicators, the ESRI was computed in full coherence with the SSB dashboard (i.e. keeping the same structure of the SSB and building on the same dashboard of indicators).

The elaboration of a composite indicator proved to be an interesting option and led to interesting results. More precisely, the ESRI allowed to perform over-time and cross-country comparisons according to a single synthetic score. This is particularly interesting to deal with the issue of the (lack of) social upward convergence of the European Union. As an example, the elaboration of the ESRI allowed to identify divergent trajectories of EU countries after the 2008 recession with Southern Europe countries presenting a slower and less effective recovery.

Moreover, the preliminary results here presented also show the potentialities of analysing relations between ESRI and other variables such as expenditure variables or other variables linked to different dimensions of human development (income, inequality, sustainability and participation).

Considering the flexibility of the approach, the ESRI would benefit of the improvements of the SSB suggested in the first part of this deliverable. We elaborated a second version of the

ESRI (called ESRI+) by including child-specific and disability-specific indicators (coherently with the newly released version of the SSB). In a similar way, other changes in the SSB could be easily included in a new version of the ESRI.

Other further developments of ESRI are linked to the possibility of disaggregating it by regions (i.e. computing a NUTS2 ESRI) and by vulnerable groups. In this case the main constraint relies in data availability mainly limited the underlying microdata structure and samples.

References

Alberti, V., Banys K., Caperna G., Del Sorbo M., Fregoni M., Havari E., Kovacic M., Lapatinas A., Litina A., Montalto V., Moura C., Neher F., Panella F., Peragine V., Pisoni E., Stuhler J., Symeonidis K., Verzillo S. & Boldrini M. (2021). *Monitoring multidimensional inequalities in the European Union*. Luxembourg: Publications Office of the European Union, doi:10.2760/20973, JRC123911.

Alkire, S., & Robles, G. (2016). Measuring multidimensional poverty: dashboards, union identification, and the multidimensional poverty index (MPI). *OPHI Res Prog*, 2, 1.

Alkire, S., & Robles, G. (2017). Multidimensional poverty index summer 2017: Brief methodological note and results. *OPHI Methodological Notes*, 45.

Alkire, S. and Santos, M.E. (2014). 'Measuring Acute Poverty in the Developing World: Robustness and Scope of the Multidimensional Poverty Index', *World Development*, 59, pp. 251–274.

Anand, S., & Sen, A. (1997). Concepts of human development and poverty! A multidimensional perspective. *United Nations Development Programme, Poverty and human development: Human development papers*, 1-20.

Arpino, B., & Obydenkova, A. V. (2020). Democracy and political trust before and after the great recession 2008: The European Union and the United Nations. *Social Indicators Research*, 148(2), 395-415.

Atkinson, R. (2000). Combating social exclusion in Europe: the new urban policy challenge. *Urban cs, forthcoming studies*, 37(5-6), 1037-1055.

Bellucci M., Biggeri M., Ferrone L., Gai L. (2021) "ESGI Score: un sistema di misurazione delle performance non finanziarie delle banche italiane" *Bancaria*, 9, pp. 70-80.

Bericat, E., & Jiménez-Rodrigo, M. L. (2019). *The Quality of European Societies – A Compilation of Composite Indicators*. Springer International Publishing.

Berik, G. (2020). Measuring what matters and guiding policy: An evaluation of the Genuine Progress Indicator. *International Labour Review*, 159(1), 71-94.

Biggeri M., Bortolotti L. (2020), "Towards a "Harmonious Society"? Multidimensional Development and the Convergence of Chinese Provinces", *Regional Studies*.

- Biggeri, M., Bortolotti, L., & Mauro, V. (2020). The Analysis of Well-Being Using the Income-Adjusted Multidimensional Synthesis of Indicators: The Case of China. *Review of Income and Wealth*.
- Biggeri, M., Clark, D. A., Ferrannini, A., & Mauro, V. (2019). Tracking the SDGs in an 'integrated' manner: A proposal for a new index to capture synergies and trade-offs between and within goals. *World Development*, 122, 628-647.
- Biggeri, M., & Mauro, V. (2018). Towards a more 'sustainable' human development index: Integrating the environment and freedom. *Ecological indicators*, 91, 220-231.
- Biggeri, M., & Ferrone, L. (2021a). Child Sustainable Human Development Index (CSHDI): Monitoring Progress for the Future Generation. *Ecological Economics*, forthcoming
- Biggeri, M., & Ferrone, L. (2021b). Measuring Child Multidimensional Deprivation: A Sustainability Perspective. *Sustainability*, 13(7), 3922.
- Biggeri, M., & Mauro, V. (2018). Towards a more 'sustainable' human development index: Integrating the environment and freedom. *Ecological indicators*, 91, 220-231.
- Boulanger, P. M. (2008). *Sustainable development indicators: a scientific challenge, a democratic issue*. S.A.P.I.EN.S [Online], 1.1 | 2008. Available at: <http://sapiens.revues.org/166>.
- Bourguignon, F., & Chakravarty, S. (2003). The measurement of multidimensional poverty. *Journal of Economic Inequality*, 1, 25-49.
- Diener, E. (1995). A value based index for measuring national quality of life. *Social indicators research*, 36(2), 107-127.
- ECR, (2019). European regional social scoreboard, Available online at <https://cor.europa.eu/en/engage/studies/Documents/European%20Regional%20Social%20Scoreboard/European-Regional-Social-Scoreboard.pdf>
- Eneroth, M., Gábos, A., Kneeshaw, J., Marchal, S., Nelson, K. & Nieuwenhuis, R. (2019). *Towards an IPOLIS Social Policy model, Deliverable 8.2*. Leuven: InGRID-2 project 730998 – H2020.
- Fleurbaey, M., & Blanchet, D. (2013). *Beyond GDP: Measuring welfare and assessing sustainability*. Oxford University Press.
- Gábos, A., Tomka, Z., Tóth, I. (2021). *Diversity and change in citizenship: mapping poverty in Europe*. EUROSHIP Working Paper No. 2. Oslo: Oslo Metropolitan University.
- Gábos, A. and Kopasz, M. (2014): Concept paper for an integrated poverty and living conditions indicator system (IPOLIS) database. Leuven, InGRID project 312691 – FP7.
- Giovannini, E., & Rondinella, T. (2018). Going beyond GDP: theoretical approaches. In *Handbook of Research on Economic and Social Well-Being*. Edward Elgar Publishing.
- Gomez, R. (2015). The economy strikes back: Support for the EU during the Great Recession. *JCMS: Journal of Common Market Studies*, 53(3), 577-592.
- Hernanz, V., Malherbet, F. & Pellizzari, M. (2004). *Take-up of Welfare Benefits in OECD Countries: A Review of the Evidence* (OECD Social, Employment and Migration Working Papers No. 17). Paris: OECD.

- Högström, J. (2013). Does the choice of democracy measure matter? Comparisons between the two leading democracy indices, Freedom House and Polity IV. *Government and Opposition*, 48(2), 201-221.
- Johansson, S. (1973). The level of living survey: A presentation. *Acta sociologica*, 16(3), 211-219.
- Klugman, J., Rodríguez, F., & Choi, H. J. (2011). The HDI 2010: new controversies, old critiques. *The Journal of Economic Inequality*, 9(2), 249-288.
- Lafortune, G., Fuller, G., Moreno, J., Schmidt-Traub, G., & Kroll, C. (2018). *SDG index and dashboards: detailed methodological paper*.
- Land, K. C., & Michalos, A. C. (2018). Fifty years after the social indicators movement: Has the promise been fulfilled?. *Social Indicators Research*, 135(3), 835-868.
- Maggino, F. (2017). Dealing with syntheses in a system of indicators. In *Complexity in society: From indicators construction to their synthesis* (pp. 115-137). Springer, Cham.
- Matsaganis, M., & Leventi, C. (2014). The distributional impact of austerity and the recession in Southern Europe. *South European Society and Politics*, 19(3), 393-412.
- Mauro, V., Biggeri, M., & Maggino, F. (2018). Measuring and monitoring poverty and well-being: A new approach for the synthesis of multidimensionality. *Social Indicators Research*, 135(1), 75-89.
- Noll, H.-H. (2004). Social indicators and quality of life research: Background, achievements and current trends. In: N. Genov (ed.): *Advances in sociological knowledge over half a century*. Paris: International Social Science Council.
- Noll, H.-H. (2018). Social Monitoring and Reporting: A Success Story in Applied Research on Social Indicators and Quality of Life. *Social Indicators Research* (135): 951–964, doi.org/10.1007/s11205-016-1513-0
- Noll, H.-H. and W. Zapf (1994). Social indicators research: Societal monitoring and social reporting. In: I. Borg and P. Ph. Mohler (eds.): *Trends and perspectives in empirical social research*. Berlin/New York: de Gruyter, 1-16.
- Nussbaum, M. C. (2011). *Creating Capabilities: The Human Development Approach*. London: The Belknap Press of Harvard University Press.
- Pelenc, J., Lompo, M. K., Ballet, J., & Dubois, J. L. (2013). Sustainable human development and the capability approach: Integrating environment, responsibility and collective agency. *Journal of Human Development and Capabilities*, 14(1), 77-94.
- Sachs, J., Kroll, C., Lafortune, G., Fuller, G., & Woelm, F. (2021). *Sustainable Development Report 2021*. Cambridge: Cambridge University Press.
- SDSN and IEEP (2020). *The 2020 Europe Sustainable Development Report: Meeting the Sustainable Development Goals in the face of the COVID-19 pandemic*. Paris and Brussels: Sustainable Development Solutions Network and Institute for European Environmental Policy.
- Sen, A. (1988). *The standard of living*. Cambridge University Press.
- Sen, A. (1999). *Development as Freedom*. Oxford: Oxford University Press.
- Sen, A. (2000). A decade of human development. *Journal of human development*, 1(1), 17-23.

- Social Protection Committee (2015). *Portfolio of EU Social Indicators for the monitoring of progress to-wards the EU objectives for social protection and social inclusion, 2015 Update*. Luxembourg: Publications Office of the European Union.
- Soffia, M. (2018). *Tackling the truly 'bad jobs': scope and limitations of a capability-based measure of job quality in Central America* (PhD Thesis). Cambridge: University of Cambridge.
- Stanig, P., Kayser, M., & Kelvin, L. (2013). Governance Indicators: Some Proposals. In *Governance Challenges and Innovations: Financial and Fiscal Governance*, pp. 189-220.
- Stanton, E. A. (2007). The human development index: A history. *PERI Working Papers*, 85
- Stiglitz, J. E., Sen, A., & Fitoussi, J. P. (2010). *Mismeasuring our lives: Why GDP doesn't add up*. New York: The New Press.
- Tarabusi, E. C., & Guarini, G. (2016). Level dependence of the adjustment for unbalance and inequality for the human development index. *Social Indicators Research*, 126(2), 527-553.
- UN General Assembly. (2015). Sustainable development goals. *SDGs Transform Our World, 2030*.
- UNICEF (2010). The children left behind. *Innocenti Report Card 9*. Florence: UNICEF Innocenti Research Centre.
- UNICEF (2016). Fairness for Children. *Innocenti Report Card 13*. Florence: UNICEF Innocenti Research Centre.
- U.S. Department of Health, Education, and Welfare. (1969). *Toward a social report*. Washington, D.C.: U.S. Government Printing Office.

Appendices

Appendix 1 Indicator overlaps in the EU monitoring tools

Equal opportunities

Indicator	Portfolio of EU social indicators (2015)	EU SDG indicator framework (2021)
Headline indicators		
Early leavers from education and training	+	-
Individuals who have basic or above basic overall digital skills	-	-
Young people neither in employment nor in education and training (NEET), Age 15-29*	+ (Age 15-19)	+
Gender employment gap*	+ (Employment rates by gender)	+
Income inequality - quintile share ratio (S80/S20)	+	-
Secondary indicators		
Adult participation in learning	-	+
Tertiary education attainment	-	+
Gender gap in part-time employment	-	-
Gender pay gap in unadjusted form	-	+

Fair working conditions

Indicator	Portfolio of EU social indicators (2015)	EU SDG indicator framework (2021)
Headline indicators		
Employment rate	+	+
Unemployment rate	+	-
Long term unemployment rate	+	+
Real gross disposable income of households	-	+
Secondary indicators		
Activity rate	+	-
Youth unemployment rate	+	-
Employment in current job by duration	-	-
Transition rates from temporary to permanent contracts	-	-
In-work-at-risk-of-poverty rate	+	+

Social protection and inclusion

Indicator	Portfolio of EU social indicators (2021)	EU SDG indicator framework (2021)
Headline indicators		
At-risk-of-poverty or social exclusion rate (AROPE)	+	+
At-risk-of-poverty-rate (AROP)	+	+
Severe material and social deprivation rate (SMSD)	+	On hold
Persons living in a household with a very low work intensity	+	+
At-risk-of-poverty rate or exclusion of children	+	+
At-risk-of-poverty-rate (AROP) for children	+	+
Severe material and social deprivation rate (SMSD) for children	+	On hold
Children living in a household with a very low work intensity	+	+
Impact of social transfers (other than pensions) on poverty reduction	+	-
Disability employment gap	-	-
Housing cost overburden	+	-
Children aged less than 3 years in formal childcare	+	-
Self-reported unmet need for medical care, 16+*	+ (Population 16-24; 18+)	+
Secondary indicators		
Severe housing deprivation (% of owners with mortgage or loan)	-	-
Severe housing deprivation (% of renters at market price)	-	-
General government expenditure by function: social protection, % of GDP	+	-
General government expenditure by function: healthcare, % of GDP	+	-
General government expenditure by function: education, % of GDP	-	-
Aggregate replacement ratio for pensions	+	-
Out-of-pocket expenditure on healthcare*	+ (But only as part of <i>Public and private expenditure as % of total health expenditure</i> indicator)	+
Healthy life years at age 65: Women	+	+
Healthy life years at age 65: Men	+	+

Appendix 2 The measurement of inequalities in the Social Scoreboard

	Reference population	Indicator type
EQUAL OPPORTUNITIES		
Headline indicators		
Early leavers from education and training	18-24	Age group-specific outcome
Individuals who have basic or above basic digital skills	16-74	Outcome
NEET	15-24	Age group-specific outcome
Gender employment gap	20-64	Horizontal inequality in outcome
Quintile share ratio (S80/S20)	Overall	Vertical inequality in outcome
Secondary indicators		
Adult participation in learning	25-64	Output
Tertiary education attainment	30-34	Age group-specific outcome
Gender gap in part-time employment	20-64	Horizontal inequality in outcome
Gender pay gap in unadjusted form	20-64	Horizontal inequality in outcome
FAIR WORKING CONDITIONS		
Headline indicators		
Employment rate	20-64	Outcome
Unemployment rate	Labour force aged 15-74	Outcome
Long-term unemployment rate	Labour force aged 15-74	Outcome
Real gross disposable income of households	Overall (from national accounts)	Outcome
Secondary indicators		
Activity rate	15-64	Outcome
Youth unemployment rate	Labour force 15-24	Age group-specific outcome
Employment in current job by duration	20-64	Outcome
Transition rates from temporary to permanent contracts	16-64	Outcome
In-work-at-risk-of-poverty rate	18 and over	Outcome
SOCIAL PROTECTION AND INCLUSION		
Headline indicators		
At-risk-of-poverty rate or social exclusion	Overall	Outcome
At-risk-poverty rate	Overall	Outcome
Severe material and social deprivation rate	Overall	Outcome
Persons living in a household with very low work intensity	Less than 60	Outcome
At-risk-of-poverty rate or social exclusion of children	0-17	Horizontal inequality in outcome
At-risk-poverty rate for children	0-17	Horizontal inequality in outcome
Severe material and social deprivation rate for children	0-17	Horizontal inequality in outcome
Children living in a household with very low work intensity	0-17	Horizontal inequality in outcome
Impact of social transfers (other than pensions) on poverty reduction	Overall	Social policy outcome: distributive impact of public expenditure

	Reference population	Indicator type
Disability employment gap	15-64	Horizontal inequality in outcome
Housing cost overburden	Overall	Outcome
Children aged less than 3 years in formal child care	Under 3	Social policy output
Self-reported unmet need for medical care	16+	Social policy outcome: social rights-based indicator
Secondary indicators		
Severe housing deprivation (owner)	Overall, owners	Horizontal inequality in outcome
Severe housing deprivation (tenant)	Overall, tenants	Horizontal inequality in outcome
General government expenditure by function: social protection		Social policy input
General government expenditure by function: healthcare		Social policy input
General government expenditure by function: education		Social policy input
Aggregate replacement ratio for pensions		Social policy outcome: what citizens de facto receive
Out-of-pocket expenditure on healthcare		Social policy input
Healthy life years at age 65: women		Horizontal inequality in outcome
Healthy life years at age 65: men		Horizontal inequality in outcome