### Appendix: Measurement Construction, Weighting, and Indicator Selection

The construction of composite indicators is a complex task which involves making a variety of decisions that have direct implications for the results which the indicator ultimately obtains. Here we provide further explanation for the selection of the indicators, and justification for the weighting which has been given to each of the indicators which have been included in the Capabilities scores awarded.

As noted within the body of the paper, the selection of domains in capabilities lists remains a topic of debate amongst scholars who employ the capability approach. Despite this persistent debate, it is possible to construct lists which can meaningfully provide insight on a number of distinct elements of welfare, especially with reference to being able to properly function within an economy. The four domains selected in the paper each contribute substantively to the way in which individuals are able to participate in their community. The definitions of the indicators below are from the definitions provided by the OECD BLI (2016b).

### **Overall weighting of domains:**

Weighting is contested issue in the construction of multi-dimensional indices of poverty and wellbeing. Those developing the Better Life Index chose not to take a position on this issue, by allowing those using the data to use their own weightings.

In weighting each domain equally, we follow the approach taken by the Human Development Index, which has the virtue of simplicity and transparency. At the same time, it should also be recognised that equal weighting is not the same as agnosticism - equal weighting has its own normative implications (Chaaban, Irani & Khoury 2016). Several other approaches are used in the literature, such as statistical or social choice methods (Robeyns 2006). In particular, work on weighting on the basis of societal preferences shows promise (Watson et al 2008). However, putting in place such an approach is well beyond the scope of this paper. As such, we would argue that, lacking any other clear normative basis for a non-equal weighting, our weighting strategy is suitable for an exploratory analysis such as this one. Further work could explore the implications of prioritising different elements of disadvantage at different levels, given the diverse priorities that individual welfare states exhibit.

# **Constructing domain measures:**

# **Employment**

The measure for the domain of employment contains three indicators, with the definitions provided below. As per Table 1, the indicators for employment are not weighted equally (they have a 40-40-20 weighting within the domain). The decision to not weight the indicators equally is based upon the difference in the impact that access to the employment market has when compared to the provision of support for those unable to find work. The capability approach highlights the important role that meaningful work has in people's lives, and the significance of having access to decent work is recognised in global justice projects like the Sustainable Development Goals.

*Long-term unemployment rate:* This indicator refers to the number of persons who have been unemployed for one year or more as a percentage of the labour force (the sum of employed and unemployed persons). Unemployed persons are defined as those who are currently not working but are willing to do so and actively searching for work.

*National employment rate:* It is the number of employed persons aged 15 to 64 over the population of the same age. Employed people are those aged 15 or more who report that they have worked in gainful employment for at least one hour in the previous week, as defined by the International Labour Organization – ILO.

*Job insecurity:* This indicator is defined in terms of the expected earnings loss, measured as the percentage of the previous earnings, associated with unemployment. This loss depends on the risk of becoming unemployed, the expected duration of unemployment and the degree of mitigation against these losses provided by government transfers to the unemployed (effective insurance).

#### Income

The income which individuals have access to is crucial to determining the kind of life which they are able to live. As such, understanding the gap which exists between the income which a disadvantaged person has, and an average person, is crucial to understanding the differences in options, opportunities, and welfare which they possess. Income is measured using only one indicator due to limited availability for other indicators that could be evaluated in that domain from the context of distributional inequality, using the BLI data which is the source for this project.

*Income ratio between bottom quintile and mean income:* Income is measured as the maximum amount that a household can afford to consume without having to reduce its assets or to increase its liabilities. It is obtained adding to people's gross income (earnings, self-employment and capital income, as well as current monetary transfers received from other sectors) the social transfers in-kind that households receive from governments (such as education and health care services), and then subtracting the taxes on income and wealth, the social security contributions paid by households as well as the depreciation of capital goods consumed by households. Available data refer to the sum of households and non-profit institution serving households.

# Education

Educational inequality can play an important role in shaping the life prospects available to individuals. Educational inequality can take various forms, including an unequal level of access to education in terms of the duration of education, and an unequal level of access to a quality education. The first indicator in this domain evaluates differences in the duration of education, identifying those who hold a base level below a certain threshold. The second indicator evaluates the quality of education (in terms of test score performance) which is held by the bottom quintile, compared to the national average test score.

*Percentage of population with upper-secondary level education*: Educational attainment considers the number of adults aged 25 to 64 holding at least an upper secondary degree over the population of the same age, as defined by the OECD-ISCED classification.<sup>1</sup>

*Ratio of low education to mean on PISA scores*: Students' mean score in reading, mathematics and science as assessed by the OECD's Programme for International Student Assessment (PISA). The bottom quintile is used for this measure to represent disadvantage, as this is the metric which data is available in from the OECD. This is a measure of the bottom quintile of the PISA index of economic, social, and cultural status (ESCS), against the mean national score.

<sup>&</sup>lt;sup>1</sup> A potential issue with educational attainment data is that it may be shaped by variations in the age distribution of the population, something that the index does not account for. However, as the data in the index is not broken down into smaller age-categories, standardising the data in a robust way is challenging, and so is not attempted here.

### <u>Health</u>

The central focus of health in the initial articulation of the capability approach highlights the significance that is has in shaping the options and opportunities available to individuals. The two indicators used to measure the domain of health are weighted equally. Life expectancy at birth is included as it is reflective of the overall health which individuals will experience, on average, in their society. The other half of the health domain measures the self-rated health gap between disadvantaged and average citizens. This equal weighting is tied to a view that countries which produce good health overall for their society should not be unduly punished for inequality in the health they provide. At the same time, it is important to recognise the significance that high levels of health inequality can have in placing an unfair health burden on the disadvantaged members of the community, and the resultant impact this can have on their overall welfare.

*Life expectancy at birth, as a proportion of the maximum score*: Life expectancy measures how long on average people could expect to live based on the age-specific death rates currently prevailing. This measure refers to people born today and is computed as a weighted mean of life expectancy for men and women. The ratio is the national score measured as a proportion of the maximum score achieved (which is Japan, with a life expectancy of 83.9 years).

*Self-rated health gap between bottom quintile and mean score*: This indicator refers to the percentage of the population aged 15 years old and over who report "good" or better health. The WHO recommends using a standard health interview survey to measure it, phrasing the question as "How is your health in general?" with response scale "It is very good/ good/ fair/ bad/ very bad". The ratio is calculated by comparing the self-reported health of people with disposable income among the bottom quintile against the mean national score.

# References

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