Supplemental Online Appendix - Dependency Ratios in Healthy Ageing

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Description of our disability dependency ratio (DDR)

We propose a DR that measures population ageing based on health characteristics of the population. The indicator is built following the characteristics approach developed by Sanderson and Scherbov (2013) which provides a method that facilitates comparability with other ageing indicators. Following their notation, the general form of their indicators is given by:

\[ M_N(t) = g(S(a,t), H(a,t)) \] (1)

Where, \( M_N(t) \) is the ageing measure at time \( t \), \( S(a,t) \) is a vector that contains the age structure of the population, and \( H(a,t) \) is a vector of age-specific characteristics. Vector \( S \) can be broken up by sex or other demographic dimensions of the population, if required. Vector \( H \) could include physiological, psychological, behavioural, or any other characteristic that would add qualitative information about the ageing process that it is not present in purely chronological indicators.¹

The Elder Ratios are ageing indicators based on the characteristics approach. Elder Ratios sum the age population groups \( s \) multiplied by the vector of age-specific characteristics \( h \), and divide the summatory over the rest of the population. Both \( s \) and \( h \) vary over time \( t \).

\[ Elder \ Ratios_t = \frac{\sum_a s_{a,t} h_{a,t}}{\sum_a s_{a,t}(1 - h_{a,t})} \] (2)

The key to use Elder Ratios is to understand the schedule of characteristics \( h \), which varies over \( a \) and \( t \). For example, the prospective dependency ratio divides the population with less than 15 years of life

¹ MN stands for new measure, as Sanderson and Schervob were comparing it with conventional measures (MC) of population ageing.
expectancy over the rest of the adult population (those over 19 years of age). In this case, the schedule of characteristics indicates the exact age at which life expectancy goes below 15, at each moment $t$. Suppose that this number equals 68 in a particular year for the studied population. Then, $h$ would be a dichotomic variable where $h = 1$ for $a \geq 68$ & $h = 0$ for $20 \leq a < 68$.

For our indicator, matrix $H$ contains does not contain dichotomic values (0 or 1) based on age thresholds, but the values of the characteristic itself. Namely, the average disability prevalence in age group $a$ at time $t$, in percent of the age-group’s total population. Following Sanderson and Scherbov (2010) who proposed a DR based on disability where those with at least 20 years old and disabilities are divided by those with at least 20 years and without disabilities. The indicator is multiplied by 100 as the United Nation’s OADR.

**Scenarios**

The following section describes our assumptions and calculations for each scenario. Under all scenarios, the population for each country grows according to UN demographic projections\(^2\). The only difference derives from the assumptions for disability prevalence projections.

**1) Constant Prevalence Scenario**

Under this scenario, the rate of disability prevalence for each age group is keep at its 2015 value during the projection period (2015-2050).

**2) Past-Trends Scenario**

For this scenario, we calculate the average percent change in disability prevalence rates by age group and country, for the 1990-2015 period. Then, we assume that disability prevalence rates continue growing at the historical average rates during the projection period.

**3) Life Expectancy Scenario**

For this scenario, we regress disability prevalence rates (explained variable) over life expectancy (explanatory variable), for the 1990-2015 period. A visual inspection of the data shows that the relationship increases with age, (Appendix Figure 1). Thus, we regress each age group separately. We consider that countries may have unobservable characteristics that correlate with disability prevalence, for example, higher income levels or better healthcare systems may reduce disability prevalence rates. The Hausman test reinforces this hypothesis, thus we run a linear and a fixed effects panel model. The estimated coefficients under the fixed effects model are smaller but close to the those under the simple linear regression. Thus, we use the once obtained in the latter option and interpret the result as a best-case scenario, where increases in life expectancy do not only affect disability prevalence directly but also indirectly through the unobservable country characteristics. For example, as life
expectancy increases, countries with low life expectancy catch-up with the rest in other dimensions such as income or health spending.

Appendix Figure 1. Disability prevalence rates and life expectancy by age group and country (1990-2017)

Source: UN and GBD

We use the results to predict future levels of disability prevalence rates, by country and age group, based on the UN’s projections of life expectancy. We do not use the predictions of the model but apply the growth rates of the predictions to the projection period.

Table 1. Results of panel regression for life expectancy scenario

| age group | variable coefficient | standard error | constant coefficient | standard error | N  | R2  |
|-----------|----------------------|----------------|----------------------|----------------|----|-----|
| 20-24     | -0.0708***           | 0.0055         | 12.78***             | 0.29           | 1116| 0.13|
| 25-29     | -0.1018***           | 0.0070         | 15.13***             | 0.33           | 1116| 0.16|
| 30-34     | -0.139***            | 0.0079         | 17.3***              | 0.34           | 1116| 0.22|
| 35-39     | -0.1818***           | 0.0089         | 19.38***             | 0.35           | 1116| 0.27|
| 40-44     | -0.2147***           | 0.0099         | 20.93***             | 0.34           | 1116| 0.30|
| 45-49     | -0.2697***           | 0.0111         | 22.91***             | 0.34           | 1116| 0.35|
| 50-54     | -0.3158***           | 0.0124         | 24.24***             | 0.32           | 1116| 0.37|
| 55-59     | -0.3789***           | 0.0143         | 25.86***             | 0.32           | 1116| 0.39|
| 60-64     | -0.4559***           | 0.0175         | 27.72***             | 0.32           | 1116| 0.38|
| 65-69     | -0.5916***           | 0.0224         | 30.56***             | 0.33           | 1116| 0.39|
| 70-74     | -0.7394***           | 0.0282         | 33.03***             | 0.33           | 1116| 0.38|
| 75-79     | -0.9171***           | 0.0366         | 35.38***             | 0.33           | 1116| 0.36|
| 80-84     | -1.0817***           | 0.0473         | 37.74***             | 0.32           | 1116| 0.32|
| 85-89     | -1.1291***           | 0.0601         | 39.21***             | 0.30           | 1116| 0.24|
Notes: Disability prevalence rate expressed in percent for the regression. The coefficient indicates the change in the rate when life expectancy increases in one year. * p < 0.05, ** p < 0.01, *** p < 0.001.

(4) Catch Up Scenario

In this scenario, the disability prevalence rate of each age group linearly transitions from its historical value in 2015 to a target value in 2100. The value in 2100 corresponds to the minimum rate for the correspondent age group across all countries in 2015.

Results by Country

The countries included in the analysis were determined by data restrictions. The Global Burden of Disease database provides data for 195 countries. 11 of them were dropped because there was no population or income group data. Table 2 shows the results of the projections by country and the composition of the Income groups.

Table 2. Disability dependency ratio projections for all countries.

| Region                      | DDR_CP 2015 | DDR_CP 2050 | DDR_LE 2015 | DDR_LE 2050 | DDR_PT 2015 | DDR_PT 2050 | DDR_CU 2015 | DDR_CU 2050 |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| World                       | 16.2        | 18.9        | 16.2        | 18.4        | 16.2        | 17.5        | 16.2        | 17.3        |
| Low income                  | 15.9        | 16.8        | 15.9        | 16.3        | 15.9        | 13.6        | 15.9        | 14.9        |
| Afghanistan                 | 21.8        | 23.4        | 21.8        | 22.7        | 21.8        | 19.6        | 21.8        | 18.7        |
| Benin                       | 15.7        | 16.2        | 15.7        | 16.0        | 15.7        | 11.0        | 15.7        | 14.5        |
| Burkina Faso                | 14.6        | 15.3        | 14.6        | 14.7        | 14.6        | 8.4         | 14.6        | 13.8        |
| Burundi                     | 15.2        | 15.7        | 15.2        | 15.1        | 15.2        | 16.0        | 15.2        | 14.1        |
| Central African Republic    | 17.9        | 18.3        | 17.9        | 16.6        | 17.9        | 15.2        | 17.9        | 15.7        |
| Chad                        | 16.3        | 16.7        | 16.3        | 16.1        | 16.3        | 14.7        | 16.3        | 14.6        |
| Comoros                     | 13.7        | 14.9        | 13.7        | 14.5        | 13.7        | 11.1        | 13.7        | 13.8        |
| Dem. People’s Republic of Korea | 15.0    | 18.2        | 15.0        | 16.7        | 15.0        | 19.1        | 15.0        | 17.1        |
| Democratic Republic of the Congo | 17.4    | 17.7        | 17.4        | 16.7        | 17.4        | 14.6        | 17.4        | 15.2        |
| Eritrea                     | 16.2        | 17.5        | 16.2        | 16.2        | 16.2        | 10.2        | 16.2        | 15.4        |
| Ethiopia                    | 14.2        | 15.6        | 14.2        | 14.6        | 14.2        | 10.8        | 14.2        | 14.3        |
| Gambia                      | 15.8        | 16.3        | 15.8        | 16.0        | 15.8        | 14.9        | 15.8        | 14.4        |
| Guinea                      | 15.4        | 16.1        | 15.4        | 15.0        | 15.4        | 13.8        | 15.4        | 14.4        |
| Guinea-Bissau               | 16.0        | 17.1        | 16.0        | 16.5        | 16.0        | 15.2        | 16.0        | 15.0        |
| Haiti                       | 16.3        | 18.1        | 16.3        | 17.7        | 16.3        | 17.6        | 16.3        | 16.2        |
| Liberia                     | 19.1        | 19.8        | 19.1        | 18.7        | 19.1        | 20.2        | 19.1        | 16.6        |
| Madagascar                  | 14.5        | 15.6        | 14.5        | 14.6        | 14.5        | 13.6        | 14.5        | 14.2        |
| Malawi                      | 14.4        | 15.4        | 14.4        | 14.2        | 14.4        | 12.4        | 14.4        | 14.0        |
| Mali                        | 15.6        | 16.0        | 15.6        | 15.3        | 15.6        | 12.0        | 15.6        | 14.1        |
| Mozambique                  | 16.8        | 17.0        | 16.8        | 16.0        | 16.8        | 15.9        | 16.8        | 14.9        |
| Nepal                       | 16.8        | 19.6        | 16.8        | 17.8        | 16.8        | 16.1        | 16.8        | 17.3        |
| Country                        | 16.0 | 18.5 | 16.0 | 18.1 | 16.0 | 16.8 | 16.0 | 16.6 |
|-------------------------------|------|------|------|------|------|------|------|------|
| Niger                         | 14.6 | 14.1 | 14.6 | 13.5 | 14.6 | 11.7 | 14.6 | 12.9 |
| Rwanda                        | 14.9 | 16.4 | 14.9 | 15.5 | 14.9 | 16.2 | 14.9 | 14.9 |
| Senegal                       | 14.8 | 15.9 | 14.8 | 15.0 | 14.8 | 13.7 | 14.8 | 14.4 |
| Sierra Leone                  | 15.8 | 16.8 | 15.8 | 16.0 | 15.8 | 15.3 | 15.8 | 14.8 |
| Somalia                       | 14.8 | 15.0 | 14.8 | 14.3 | 14.8 | 13.7 | 14.8 | 13.5 |
| South Sudan                   | 17.4 | 18.4 | 17.4 | 17.3 | 17.4 | 16.8 | 17.4 | 15.8 |
| Syrian Arab Republic          | 17.3 | 19.6 | 17.3 | 17.3 | 17.3 | 20.8 | 17.3 | 17.2 |
| Tajikistan                    | 14.1 | 16.5 | 14.1 | 15.4 | 14.1 | 16.0 | 14.1 | 15.1 |
| Togo                          | 15.2 | 15.9 | 15.2 | 15.7 | 15.2 | 13.3 | 15.2 | 14.3 |
| Uganda                        | 14.7 | 15.4 | 14.7 | 14.6 | 14.7 | 7.5  | 14.7 | 13.8 |
| United Republic of Tanzania   | 14.1 | 14.7 | 14.1 | 13.7 | 14.1 | 11.0 | 14.1 | 13.6 |
| Yemen                         | 19.1 | 21.1 | 19.1 | 20.4 | 19.1 | 18.7 | 19.1 | 17.5 |
| Zimbabwe                     | 16.1 | 18.0 | 16.1 | 16.8 | 16.1 | 18.0 | 16.1 | 15.7 |

**Lower middle income**

| Country                        | 16.0 | 18.5 | 16.0 | 18.1 | 16.0 | 16.8 | 16.0 | 16.6 |
|-------------------------------|------|------|------|------|------|------|------|------|
| Angola                        | 16.6 | 17.1 | 16.6 | 16.5 | 16.6 | 14.8 | 16.6 | 14.8 |
| Bangladesh                    | 15.7 | 19.5 | 15.7 | 17.4 | 15.7 | 17.7 | 15.7 | 17.6 |
| Bhutan                        | 14.5 | 18.7 | 14.5 | 17.0 | 14.5 | 15.1 | 14.5 | 17.2 |
| Bolivia (Plurinational State of) | 14.7 | 16.5 | 14.7 | 15.6 | 14.7 | 14.6 | 14.7 | 15.5 |
| Cabo Verde                    | 14.1 | 16.7 | 14.1 | 15.5 | 14.1 | 15.2 | 14.1 | 15.6 |
| Cambodia                      | 14.4 | 17.8 | 14.4 | 16.2 | 14.4 | 14.3 | 14.4 | 16.1 |
| Cameroon                      | 16.0 | 16.8 | 16.0 | 15.8 | 16.0 | 12.5 | 16.0 | 14.9 |
| Congo                         | 17.1 | 17.8 | 17.1 | 16.7 | 17.1 | 14.2 | 17.1 | 15.5 |
| Côte d'Ivoire                 | 15.4 | 15.7 | 15.4 | 15.0 | 15.4 | 11.3 | 15.4 | 14.1 |
| Djibouti                      | 13.5 | 15.9 | 13.5 | 15.5 | 13.5 | 15.4 | 13.5 | 14.9 |
| Egypt                         | 17.5 | 19.5 | 17.5 | 18.2 | 17.5 | 18.8 | 17.5 | 17.0 |
| El Salvador                   | 14.3 | 16.9 | 14.3 | 15.4 | 14.3 | 15.8 | 14.3 | 16.2 |
| Georgia                       | 17.7 | 20.3 | 17.7 | 18.4 | 17.7 | 21.4 | 17.7 | 18.6 |
| Ghana                         | 15.0 | 16.0 | 15.0 | 15.6 | 15.0 | 13.6 | 15.0 | 14.6 |
| Honduras                      | 13.2 | 16.1 | 13.2 | 15.2 | 13.2 | 16.1 | 13.2 | 15.3 |
| India                         | 16.7 | 19.7 | 16.7 | 18.7 | 16.7 | 17.5 | 16.7 | 17.4 |
| Indonesia                     | 14.3 | 17.2 | 14.3 | 16.4 | 14.3 | 16.1 | 14.3 | 16.0 |
| Kenya                         | 14.0 | 15.9 | 14.0 | 14.8 | 14.0 | 16.6 | 14.0 | 14.6 |
| Kiribati                      | 17.1 | 19.1 | 17.1 | 18.3 | 17.1 | 21.8 | 17.1 | 16.6 |
| Kyrgyzstan                    | 14.7 | 16.9 | 14.7 | 16.0 | 14.7 | 14.8 | 14.7 | 15.6 |
| Lao People's Democratic Republic | 13.3 | 16.0 | 13.3 | 15.1 | 13.3 | 13.6 | 13.3 | 15.0 |
| Lesotho                       | 19.6 | 20.9 | 19.6 | 19.3 | 19.6 | 25.6 | 19.6 | 17.3 |
| Mauritania                    | 14.4 | 15.6 | 14.4 | 15.3 | 14.4 | 13.2 | 14.4 | 14.2 |
| Mongolia                      | 14.9 | 18.0 | 14.9 | 16.8 | 14.9 | 18.1 | 14.9 | 16.3 |
| Morocco                       | 18.6 | 21.9 | 18.6 | 19.7 | 18.6 | 21.2 | 18.6 | 19.1 |
| Myanmar                       | 15.0 | 17.5 | 15.0 | 17.2 | 15.0 | 14.2 | 15.0 | 16.1 |
| Nicaragua                     | 13.2 | 16.7 | 13.2 | 15.1 | 13.2 | 14.0 | 13.2 | 16.0 |
| Nigeria                       | 16.0 | 16.4 | 16.0 | 15.5 | 16.0 | 15.1 | 16.0 | 14.5 |
| Pakistan                      | 15.2 | 17.1 | 15.2 | 16.8 | 15.2 | 16.5 | 15.2 | 15.4 |
| Papua New Guinea              | 17.3 | 19.0 | 17.3 | 18.6 | 17.3 | 19.4 | 17.3 | 16.4 |
| Philippines                   | 14.7 | 16.7 | 14.7 | 16.1 | 14.7 | 15.7 | 14.7 | 15.3 |
| Republic of Moldova           | 18.0 | 22.1 | 18.0 | 20.6 | 18.0 | 20.0 | 18.0 | 19.8 |
| Sao Tome and Principe         | 14.2 | 15.4 | 14.2 | 15.1 | 14.2 | 14.5 | 14.2 | 14.2 |
| Solomon Islands               | 15.5 | 17.6 | 15.5 | 16.0 | 15.5 | 19.3 | 15.5 | 15.7 |
| Country                   | 2021 | 2020 | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 |
|--------------------------|------|------|------|------|------|------|------|------|
| Sri Lanka                | 15.0 | 18.6 | 15.0 | 17.0 | 15.0 | 16.9 | 15.0 | 17.7 |
| Sudan                    | 17.2 | 18.1 | 17.2 | 17.7 | 17.2 | 16.9 | 17.2 | 15.7 |
| Swaziland                | 18.8 | 20.4 | 18.8 | 19.9 | 18.8 | 25.2 | 18.8 | 17.1 |
| Timor-Leste              | 15.0 | 15.3 | 15.0 | 14.3 | 15.0 | 11.7 | 15.0 | 13.9 |
| Tunisia                  | 17.2 | 20.6 | 17.2 | 18.6 | 17.2 | 20.2 | 17.2 | 18.5 |
| Ukraine                  | 20.3 | 23.2 | 20.3 | 21.3 | 20.3 | 22.4 | 20.3 | 20.5 |
| Uzbekistan               | 14.5 | 17.8 | 14.5 | 17.0 | 14.5 | 16.6 | 14.5 | 16.3 |
| Vanuatu                  | 16.3 | 18.6 | 16.3 | 17.1 | 16.3 | 19.3 | 16.3 | 16.4 |
| Viet Nam                 | 13.6 | 18.0 | 13.6 | 16.3 | 13.6 | 15.9 | 13.6 | 17.3 |
| Zambia                   | 14.5 | 15.4 | 14.5 | 14.5 | 14.5 | 14.0 | 14.5 | 14.0 |
| **Upper middle income**  | **15.1** | **19.0** | **15.1** | **18.4** | **15.1** | **17.8** | **15.1** | **17.9** |
| Albania                  | 17.7 | 22.3 | 17.7 | 19.8 | 17.7 | 21.7 | 17.7 | 20.3 |
| Algeria                  | 16.8 | 20.2 | 16.8 | 18.5 | 16.8 | 19.3 | 16.8 | 18.0 |
| Armenia                  | 16.8 | 20.6 | 16.8 | 18.8 | 16.8 | 19.2 | 16.8 | 18.9 |
| Azerbaijan               | 15.0 | 18.7 | 15.0 | 17.9 | 15.0 | 18.7 | 15.0 | 17.2 |
| Belarus                  | 19.8 | 22.5 | 19.8 | 20.7 | 19.8 | 21.9 | 19.8 | 20.0 |
| Belize                   | 13.5 | 15.4 | 13.5 | 14.4 | 13.5 | 15.7 | 13.5 | 14.6 |
| Bosnia and Herzegovina   | 20.6 | 25.2 | 20.6 | 22.4 | 20.6 | 26.1 | 20.6 | 22.0 |
| Botswana                 | 17.7 | 21.0 | 17.7 | 19.3 | 17.7 | 21.8 | 17.7 | 17.9 |
| Brazil                   | 16.2 | 19.8 | 16.2 | 18.0 | 16.2 | 18.5 | 16.2 | 18.4 |
| Bulgaria                 | 20.2 | 23.2 | 20.2 | 21.5 | 20.2 | 22.2 | 20.2 | 20.8 |
| China                    | 14.1 | 18.5 | 14.1 | 16.9 | 14.1 | 17.2 | 14.1 | 17.9 |
| Colombia                 | 13.0 | 16.2 | 13.0 | 15.2 | 13.0 | 14.3 | 13.0 | 16.1 |
| Costa Rica               | 13.6 | 17.5 | 13.6 | 15.7 | 13.6 | 16.8 | 13.6 | 17.2 |
| Cuba                     | 15.1 | 19.5 | 15.1 | 17.5 | 15.1 | 18.3 | 15.1 | 19.1 |
| Dominican Republic       | 14.1 | 16.6 | 14.1 | 15.4 | 14.1 | 16.8 | 14.1 | 15.9 |
| Ecuador                  | 13.9 | 16.6 | 13.9 | 15.2 | 13.9 | 15.8 | 13.9 | 15.9 |
| Equatorial Guinea        | 15.8 | 17.0 | 15.8 | 15.8 | 15.8 | 13.2 | 15.8 | 14.9 |
| Fiji                     | 17.0 | 19.6 | 17.0 | 18.6 | 17.0 | 20.4 | 17.0 | 17.4 |
| Gabon                    | 16.8 | 18.5 | 16.8 | 17.4 | 16.8 | 16.6 | 16.8 | 16.3 |
| Grenada                  | 13.9 | 16.7 | 13.9 | 15.6 | 13.9 | 16.0 | 13.9 | 16.0 |
| Guatemala                | 13.5 | 15.7 | 13.5 | 14.5 | 13.5 | 13.2 | 13.5 | 14.9 |
| Guyana                   | 15.8 | 17.4 | 15.8 | 16.9 | 15.8 | 16.6 | 15.8 | 15.9 |
| Iran (Islamic Republic of) | 18.1 | 22.9 | 18.1 | 20.2 | 18.1 | 23.2 | 18.1 | 20.0 |
| Iraq                     | 17.8 | 19.1 | 17.8 | 18.4 | 17.8 | 15.7 | 17.8 | 16.3 |
| Jamaica                  | 14.7 | 18.1 | 14.7 | 16.8 | 14.7 | 19.1 | 14.7 | 17.3 |
| Jordan                   | 16.0 | 18.5 | 16.0 | 17.3 | 16.0 | 17.1 | 16.0 | 16.4 |
| Kazakhstan               | 16.2 | 18.1 | 16.2 | 17.1 | 16.2 | 16.4 | 16.2 | 16.5 |
| Lebanon                  | 18.6 | 23.7 | 18.6 | 20.8 | 18.6 | 23.5 | 18.6 | 20.7 |
| Libya                    | 18.0 | 22.1 | 18.0 | 20.7 | 18.0 | 24.4 | 18.0 | 19.0 |
| Malaysia                 | 12.9 | 16.5 | 12.9 | 15.0 | 12.9 | 15.8 | 12.9 | 15.8 |
| Maldives                 | 11.8 | 16.9 | 11.8 | 14.4 | 11.8 | 11.7 | 11.8 | 16.2 |
| Mauritius                | 17.0 | 21.3 | 17.0 | 19.6 | 17.0 | 22.2 | 17.0 | 19.4 |
| Mexico                   | 13.9 | 17.5 | 13.9 | 15.9 | 13.9 | 17.6 | 13.9 | 16.6 |
| Montenegro               | 19.1 | 22.8 | 19.1 | 20.3 | 19.1 | 23.3 | 19.1 | 20.4 |
| Namibia                  | 16.6 | 18.5 | 16.6 | 17.1 | 16.6 | 17.9 | 16.6 | 16.1 |
| Paraguay                 | 15.1 | 17.3 | 15.1 | 16.7 | 15.1 | 17.2 | 15.1 | 16.0 |
| Peru                     | 13.2 | 15.8 | 13.2 | 14.4 | 13.2 | 14.4 | 13.2 | 15.5 |
| Country                                | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 |
|----------------------------------------|------|------|------|------|------|------|------|------|
| Romania                                | 20.2 | 23.8 | 20.2 | 21.8 | 20.2 | 21.2 | 20.2 | 21.1 |
| Russian Federation                     | 19.9 | 22.4 | 19.9 | 21.1 | 19.9 | 21.5 | 19.9 | 19.8 |
| Saint Lucia                            | 14.8 | 18.6 | 14.8 | 16.9 | 14.8 | 17.3 | 14.8 | 17.9 |
| Saint Vincent and the Grenadines       | 15.0 | 18.1 | 15.0 | 17.1 | 15.0 | 18.5 | 15.0 | 17.0 |
| Samoa                                  | 15.8 | 17.9 | 15.8 | 15.8 | 15.8 | 19.1 | 15.8 | 16.3 |
| Serbia                                 | 20.3 | 23.1 | 20.3 | 21.3 | 20.3 | 22.7 | 20.3 | 20.5 |
| South Africa                           | 18.1 | 19.8 | 18.1 | 18.8 | 18.1 | 21.2 | 18.1 | 17.2 |
| Suriname                               | 14.8 | 17.0 | 14.8 | 16.1 | 14.8 | 17.9 | 14.8 | 16.0 |
| TFYR Macedonia                         | 18.1 | 22.3 | 18.1 | 20.2 | 18.1 | 22.0 | 18.1 | 20.0 |
| Thailand                               | 14.8 | 19.4 | 14.8 | 17.6 | 14.8 | 17.7 | 14.8 | 18.7 |
| Tonga                                  | 16.1 | 17.6 | 16.1 | 16.2 | 16.1 | 18.6 | 16.1 | 15.9 |
| Turkey                                 | 17.0 | 20.4 | 17.0 | 18.1 | 17.0 | 18.1 | 17.0 | 18.5 |
| Turkmenistan                           | 13.9 | 16.2 | 13.9 | 15.8 | 13.9 | 15.1 | 13.9 | 15.1 |
| Venezuela (Bolivarian Republic of)     | 13.3 | 16.1 | 13.3 | 14.8 | 13.3 | 15.8 | 13.3 | 15.6 |
| **High income**                        | **19.1** | **22.0** | **19.1** | **21.2** | **19.1** | **22.1** | **19.1** | **20.1** |
| Antigua and Barbuda                    | 14.8 | 17.8 | 14.8 | 16.4 | 14.8 | 17.2 | 14.8 | 16.9 |
| Argentina                              | 16.4 | 18.2 | 16.4 | 16.6 | 16.4 | 18.4 | 16.4 | 17.0 |
| Australia                              | 18.9 | 21.2 | 18.9 | 19.2 | 18.9 | 21.2 | 18.9 | 19.2 |
| Austria                                | 19.2 | 22.2 | 19.2 | 20.3 | 19.2 | 22.2 | 19.2 | 20.6 |
| Bahamas                                | 14.1 | 17.3 | 14.1 | 16.0 | 14.1 | 17.1 | 14.1 | 16.8 |
| Bahrain                                | 15.6 | 19.2 | 15.6 | 17.7 | 15.6 | 17.9 | 15.6 | 17.0 |
| Barbados                               | 15.7 | 18.1 | 15.7 | 16.5 | 15.7 | 18.4 | 15.7 | 17.6 |
| Belgium                                | 20.5 | 22.8 | 20.5 | 20.6 | 20.5 | 23.5 | 20.5 | 20.6 |
| Brunei Darussalam                      | 13.5 | 18.3 | 13.5 | 16.6 | 13.5 | 16.7 | 13.5 | 17.3 |
| Canada                                 | 18.3 | 21.0 | 18.3 | 19.0 | 18.3 | 21.2 | 18.3 | 19.5 |
| Chile                                  | 17.2 | 20.8 | 17.2 | 18.5 | 17.2 | 20.6 | 17.2 | 19.1 |
| Croatia                                | 20.8 | 24.6 | 20.8 | 22.0 | 20.8 | 23.9 | 20.8 | 21.8 |
| Cyprus                                 | 16.8 | 20.2 | 16.8 | 18.0 | 16.8 | 19.4 | 16.8 | 18.8 |
| Czechia                                | 20.9 | 25.5 | 20.9 | 22.8 | 20.9 | 24.7 | 20.9 | 22.2 |
| Denmark                                | 19.2 | 21.1 | 19.2 | 19.0 | 19.2 | 21.3 | 19.2 | 19.5 |
| Estonia                                | 20.5 | 23.5 | 20.5 | 21.2 | 20.5 | 22.1 | 20.5 | 21.1 |
| Finland                                | 20.4 | 22.0 | 20.4 | 20.1 | 20.4 | 21.5 | 20.4 | 20.1 |
| France                                 | 18.2 | 20.2 | 18.2 | 18.3 | 18.2 | 19.9 | 18.2 | 19.2 |
| Germany                                | 19.7 | 22.6 | 19.7 | 20.2 | 19.7 | 22.1 | 19.7 | 20.8 |
| Greece                                 | 19.3 | 22.8 | 19.3 | 20.5 | 19.3 | 22.8 | 19.3 | 21.2 |
| Guam                                   | 16.3 | 19.9 | 16.3 | 17.4 | 16.3 | 22.9 | 16.3 | 18.2 |
| Hungary                                | 20.9 | 24.6 | 20.9 | 22.6 | 20.9 | 22.0 | 20.9 | 21.5 |
| Iceland                                | 17.8 | 20.6 | 17.8 | 18.6 | 17.8 | 20.0 | 17.8 | 19.1 |
| Ireland                                | 18.3 | 21.2 | 18.3 | 19.1 | 18.3 | 21.4 | 18.3 | 19.4 |
| Israel                                 | 17.3 | 18.8 | 17.3 | 17.1 | 17.3 | 18.1 | 17.3 | 17.3 |
| Italy                                  | 19.3 | 22.4 | 19.3 | 20.2 | 19.3 | 21.2 | 19.3 | 21.1 |
| Japan                                  | 18.4 | 21.5 | 18.4 | 19.4 | 18.4 | 22.2 | 18.4 | 20.7 |
| Kuwait                                 | 15.4 | 18.9 | 15.4 | 17.6 | 15.4 | 18.9 | 15.4 | 17.0 |
| Latvia                                 | 21.3 | 24.1 | 21.3 | 22.2 | 21.3 | 23.0 | 21.3 | 21.3 |
| Lithuania                              | 21.6 | 24.2 | 21.6 | 22.3 | 21.6 | 24.2 | 21.6 | 21.3 |
| Luxembourg                             | 19.4 | 21.9 | 19.4 | 19.7 | 19.4 | 21.1 | 19.4 | 19.6 |
| Malta                                  | 18.7 | 22.0 | 18.7 | 19.5 | 18.7 | 22.4 | 18.7 | 20.3 |
| Netherlands                            | 19.4 | 22.1 | 19.4 | 20.0 | 19.4 | 21.7 | 19.4 | 20.3 |
| Country                  | 20.2 | 21.1 | 20.2 | 21.1 | 19.7 | 20.2 | 24.0 | 20.2 | 20.7 |
|-------------------------|------|------|------|------|------|------|------|------|------|
| New Zealand             | 19.8 | 21.8 | 19.8 | 21.6 | 21.6 | 19.8 | 19.7 |
| Norway                  | 14.6 | 19.7 | 14.6 | 14.6 | 14.6 | 14.6 | 17.4 |
| Oman                    | 13.5 | 16.2 | 13.5 | 16.0 | 16.0 | 13.5 | 15.9 |
| Panama                  | 19.7 | 25.0 | 19.7 | 22.6 | 23.8 | 22.1 |      |
| Portugal                | 14.2 | 18.9 | 14.2 | 17.2 | 16.9 | 14.2 | 16.8 |
| Qatar                   | 15.4 | 17.9 | 15.4 | 18.1 | 18.1 | 15.4 | 17.4 |
| Republic of Korea       | 14.4 | 16.8 | 14.4 | 18.7 | 18.7 | 14.4 | 17.5 |
| Saudi Arabia            | 14.4 | 17.1 | 14.4 | 16.8 | 16.8 | 14.4 | 17.0 |
| Seychelles              | 19.4 | 22.3 | 19.4 | 23.4 | 23.4 | 19.4 | 21.5 |
| Slovakia                | 21.6 | 24.1 | 21.6 | 25.6 | 25.6 | 21.6 | 23.2 |
| Slovenia                | 17.8 | 19.5 | 17.8 | 20.5 | 20.5 | 17.8 | 20.0 |
| Spain                   | 19.2 | 19.2 | 19.2 | 21.1 | 21.1 | 19.2 | 19.3 |
| Sweden                  | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 17.2 |
| Switzerland             | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 17.3 |
| Trinidad and Tobago     | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.0 | 20.1 |
| United Arab Emirates    | 20.9 | 21.2 | 20.9 | 20.9 | 20.9 | 20.9 | 20.6 |
| United Kingdom          | 16.5 | 16.5 | 16.5 | 19.9 | 19.9 | 16.5 | 18.7 |
| United States Virgin Islands | 17.1 | 17.1 | 17.1 | 19.2 | 19.2 | 17.1 | 17.9 |

*Source: GBD, World Bank, UN, and authors’ calculations*