

# Statistical Appendix 1 for Chapter 2 of World Happiness Report 2019, by John F. Helliwell, Haifang Huang and Shun Wang

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## 1 Data Sources and Variable Definitions

- Happiness score or subjective well-being (variable name *ladder*): The survey measure of SWB is from the January, 2019 release of the Gallup World Poll (GWP) covering years from 2005 to 2018, as well the special GWP surveys for four countries in 2018. Unless stated otherwise, it is the national average response to the question of life evaluations. The English wording of the question is “Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?” This measure is also referred to as *Cantril life ladder*, or just *life ladder* in our analysis.
- The statistics of GDP per capita (variable name *gdp*) in purchasing power parity (PPP) at constant 2011 international dollar prices are from the November 14, 2018 update of the World Development Indicators (WDI). The GDP figures for Taiwan, up to 2014, are from the Penn World Table 9. A few countries are missing the GDP numbers in the WDI release but were present in earlier releases. We use the numbers from the earlier release, after adjusting their levels by a factor of 1.17 to take into account changes in the implied prices when switching from the PPP 2005 prices used in the earlier release to the PPP 2011 prices used in the latest release. The factor of 1.17 is the average ratio derived by dividing the US GDP per capita under the 2011 prices with their counterparts under the 2005 prices.
  - GDP per capita in 2018 are not yet available as of December 2018. We extend the GDP-per-capita time series from 2017 to 2018 using country-specific forecasts of real GDP growth in 2018 first from the OECD Economic Outlook No 104 (Edition November 2018) and then, if missing, forecasts from World Bank’s Global Economic Prospects (Last Updated:

06/07/2018). The GDP growth forecasts are adjusted for population growth with the subtraction of 2016-17 population growth as the projected 2017-18 growth.

- **Healthy Life Expectancy (HLE).** Healthy life expectancies at birth are based on the data extracted from the World Health Organization’s (WHO) Global Health Observatory data repository. The data at the source are available for the years 2000, 2005, 2010, 2015 and 2016. To match this report’s sample period (2005-2018), interpolation and extrapolation are used. A few territories/countries are not covered in the WHO data. For Hong Kong, we calculate the health life-to-life expectancy ratio using estimates reported in “Healthy life expectancy in Hong Kong Special Administrative Region of China,” by C.K. Law, & P.S.F. Yip, published at the *Bulletin of the World Health Organization*, 2003, 81 (1). For Swaziland, Taiwan and the Palestinian Territories we use data from “Healthy life expectancy for 187 countries, 1990 - 2010: a systematic analysis for the Global Burden Disease Study 2010,” by Joshua A Salomon et al, *The Lancet*, Volume 380, Issue 9859. For Kosovo, we adjust its time series of life expectancy (available in the World Development Indicators) to a time series of health life expectancy by assuming that its health life-to-life expectancy ratio equals to the world average.
- **Social support** (or having someone to count on in times of trouble) is the national average of the binary responses (either 0 or 1) to the GWP question “If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?”
- **Freedom to make life choices** is the national average of responses to the GWP question “Are you satisfied or dissatisfied with your freedom to choose what you do with your life?”
- **Generosity** is the residual of regressing national average of response to the GWP question “Have you donated money to a charity in the past month?” on GDP per capita.
- **Corruption Perception:** The measure is the national average of the survey responses to two questions in the GWP: “Is corruption widespread throughout the government or not” and “Is corruption widespread within businesses or not?” The overall perception is just the average of the two 0-or-1 responses. In case the perception of government corruption is missing, we use the perception of business corruption as the overall perception. The corruption perception at the national level is just the average response of the overall perception at the individual level.
- **Positive affect** is defined as the average of three positive affect measures in GWP: happiness, laugh and enjoyment in the Gallup World Poll waves 3-7. These measures are the responses to the following three questions, respectively:

“Did you experience the following feelings during A LOT OF THE DAY yesterday? How about Happiness?”, “Did you smile or laugh a lot yesterday?”, and “Did you experience the following feelings during A LOT OF THE DAY yesterday? How about Enjoyment?” Waves 3-7 cover years 2008 to 2012 and a small number of countries in 2013. For waves 1-2 and those from wave 8 on, positive affect is defined as the average of laugh and enjoyment only, due to the limited availability of happiness.

- Negative affect is defined as the average of three negative affect measures in GWP. They are worry, sadness and anger, respectively the responses to “Did you experience the following feelings during A LOT OF THE DAY yesterday? How about Worry?”, “Did you experience the following feelings during A LOT OF THE DAY yesterday? How about Sadness?”, and “Did you experience the following feelings during A LOT OF THE DAY yesterday? How about Anger?”
- Inequality/distribution statistics of happiness scores by WP5-year (variables names *giniLadder* and more) from the GWP release. WP5 is GWP’s coding of countries, including some sub-country territories such as Hong Kong. The statistics are named *giniLadder*, *p95Ladder*, *p90Ladder*, *p75Ladder*, *p50Ladder*, *p25Ladder*, *p10Ladder*, *p05Ladder*, *maxLadder*, *minLadder*, respectively the gini score, the various percentiles, the maximum and the minimum. They are all derived from the STATA command *ineqdec0* using observations in an individual country/territory in a given survey year with sample weights. According to Stephen P. Jenkins (May 2008, STATA Help), the command *ineqdec0* “estimate[s] a range of inequality and related indices” using unit record or ‘micro’ level data, and that the calculations do not exclude observations whose value is equal to zero.
- Alternative measures of inequality in happiness scores by wp5-year (variable names *sdLadder* and *cvLadder*). These extra measures are *sdLadder* “Standard deviation of ladder by country-year” and *cvLadder* “Standard deviation/Mean of ladder by country-year”.
- Gini of household income reported in the GWP (variable name *giniIncGallup*). The income variable is described in Gallup’s “WORLDWIDE RESEARCH METHODOLOGY AND CODEBOOK” (Updated July 2015) as “Household Income International Dollars [...] To calculate income, respondents are asked to report their household income in local currency. Those respondents who have difficulty answering the question are presented a set of ranges in local currency and are asked which group they fall into. Income variables are created by converting local currency to International Dollars (ID) using purchasing power parity (PPP) ratios.” The gini measure is generated using STATA command *ineqdec0* by WP5-year with sample weights.
- GINI index from the World Bank (variable name *giniIncWB* and *giniIncWBavg*) from the World Development Indicators. The variable labeled at the

source as “GINI index (World Bank estimate)”, series code “SI.POV.GINI”. According to the source, the data source is “World Bank, Development Research Group. Data are based on primary household survey data obtained from government statistical agencies and World Bank country departments.” The variable *giniIncWB* is an unbalanced panel of yearly index. The data availability is patchy at the yearly frequency. The variable *giniIncWBavg* is the average of *giniIncWB* in the period 2000-2016. The average does not imply that a country has the gini index in all years in that period. In fact, most do not.

- Variables in the expanded data set: “Most people can be trusted” from the GWP. The question’s English wording is “Generally speaking, would you say that most people can be trusted or that you have to be careful in dealing with people?” This indicator has a limited coverage.
- Variables in the expanded data set: “Most people can be trusted” from the 6-wave World Value Surveys. The question’s English wording is “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” The measure is defined as the percentage of respondents saying that most people can be trusted, excluding those who did not provide an answer.

## 2 Coverage, Summary Statistics and Regression Tables

WP5 is GWP’s coding of countries including some sub-country territories such as Hong Kong. Not all the countries and territories appear in all the years. Our analysis does not cover all of the country/territories that have valid happiness scores. Tables 1-3 show the WP5-year pairs that are covered.

The 2016-2018 ranking of happiness scores includes 153 countries/territories that have the happiness scores in the 2016-2018 period, plus 3 country/territory that has the happiness score in 2015 but not in 2016-18; a later table has the list of the country/countries.

To appear in regression analysis that uses data from outside the GWP survey, a WP5-year needs to have the necessary external information (GDP, healthy life expectancy, etc). The regression analysis thus does not necessarily cover all of the countries/territories in the GWP. Nor does it necessarily cover all the countries/territories that are ranked by their happiness scores in this report. The underlying principle is that we always use the largest available sample. For different kind of analysis/ranking, the largest available samples can be different.

Regions: Some of the analysis includes dummy indicator for regions, namely Western Europe, Central and Eastern Europe, Commonwealth of Independent States, Southeast Asia, South Asia, East Asia, Latin America and Caribbean, North America and ANZ, Middle East and North Africa, and Sub-Saharan Africa. A later set of

tables list individual countries by their region grouping.

### 3 Imputed Missing Values in Our Exercise of Explaining Ladder Scores with Six Factors

We do not make use of any imputed missing values in any of our headline results including the happiness rankings and all the regression outputs. The only place where we make use of imputation is when we try to decompose a country's average ladder score into components explained by six hypothesized underlying determinants (GDP per person, healthy life expectancy, social support, perceived freedom to make life choice, generosity and perception of corruption). A small number of countries have missing values in one or more of these factors. The most prominent is about the perception of corruption in businesses and governments. In several countries, the relevant questions were not asked in the Gallup World Poll. For these countries we impute the missing values using the "control of corruption" indicator from the Worldwide Governance Indicators (WGI) project. Specifically, the imputed value is calculated as the predicted value using estimates from a model that regresses Gallup World Poll's perception of corruption on WGI's control of corruption. In all, 8 countries have the measure of corruption perception imputed in this way. In a few cases, countries are missing one or more of the happiness factors over the survey period 2016-2018, but the information can be found for earlier years. In this case we use those earlier information as if they are the 2016-2018 information. There is a limit of 3 years for how far back we go in search of those missing values. After these imputations, Somalia and Taiwan are still missing GDP per capita for the period 2016-2018; we use the most recent PPP statistics of GDP per capita from *The World Factbook*. Northern Cyprus is missing GDP per capita and healthy life expectancy; we use the statistics of Cyprus instead. Swaziland, Taiwan and the Palestinian Territories are still missing the information of healthy life expectancy. We use their most-recent year (2010) information from the Lancet article discussed in "Data Sources". Finally Qatar is missing information on social support, freedom to make life choices, and generosity. We use Qatar's 2011-2012 averages as if they are 2016-2018 averages.

Table 1: Number of ladder (WP16) observations for WP5-years - Part 1

Country/territory (ID)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
United States (1)		1001	1225	1004	1003	1005	1008	2094	1005	2048	1019	1032	1013	1004
Egypt (2)	999		1024	1105	2112	2053	5296	4186	1149	1000	1000	1000	1000	1000
Morocco (3)							1006	1001	3000	1007		2050	1008	1006
Lebanon (4)	996	1000		1000	2010	2027	2007	2013	1000	1000	1000	1000	1000	1000
Saudi Arabia (5)	1004		1006	1150	2052	2038	2022	1077	2036	2035	1012	1000	1002	1003
Jordan (6)	1000		1016	1007	2016	2000	2000	2000	1000	1000	1000	1000	1012	1002
Syria (7)				1209	2100	2035	2041	2043	1022		1002			
Turkey (8)	995		1001	1004	999		1000	1001	2000	1000	2003	1002	1001	1000
Pakistan (9)	1001		1502	2484	3122	1030	1000	3012	1000	1000	1000	1000	1600	1000
Indonesia (10)		1180	1000	1050	1080	1080	1000	3000	1000	1000	1000	1000	1000	1000
Bangladesh (11)		1048	1200	1000	1000	1000	1000	3000	1000	1000	1000	1000	1000	1000
United Kingdom (12)	1037		1204	1001	1002	1000	9239	1340	750	2000	1000	1000	1000	1000
France (13)	1002	1220		1006	1000	1004	1001	2005	751	2000	1000	1000	1000	1000
Germany (14)	1001		1221	3016	2010	1007	9105	1326	751	2014	1000	2000	1000	1000
Netherlands (15)	1000		1000	1000		1001	1000	1000	751	2002	1003	1000	1001	1002
Belgium (16)	1003		1022	1002		1003	1002	1001	1006	2004	1037	1000	1001	1011
Spain (17)	1000		1004	1009	1005	1000	1006	2003	1004	2000	1000	1000	1000	1000
Italy (18)	1002		1008	1008	1005	1000	1005	2007	1004	2000	1000	1000	1000	1000
Poland (19)	1000		1000		1000	2000	1029	1000	1000	1000	1000	1000	1000	1000
Hungary (20)	1025		1010		1008	1008	1014	1004	1019	1003	1000	1000	1000	1000
Czech Republic (21)	1001		1072		2082	1000	1005	1001	1008	1000	1000	1000	1000	1000
Romania (22)	1022		1000		1000	1000	1008	1000	1000	998	1001	1001	1001	1002
Sweden (23)	1000		1001	1000	1002	1002	1006	1000	750	2001	1000	1000	1000	1001
Greece (24)	1002		1000		1000	1000	1000	1000	1003	1000	1000	1000	1000	1000
Denmark (25)	1004		1009	1001	1000	1000	1005	1001	753	2002	1005	1000	1000	1000
Iran (26)	1300		1004	1040			1003	3507	1000	2009	1001	1000	1000	1002
Hong Kong S.A.R. of China (27)	800		751	755	756	1028	1006		2017		1005	1007		
Singapore (28)		1095	1000	2551	1005	1001	1000		1000	1000	1000	1000	1000	1000
Japan (29)	1000		1150	3000	1000	1000	1000	2000	1001	2006	1003	1003	1002	1003
China (30)		3730	3733	3712	3833	4151	4220	9413	4244	4696	4265	4373	4141	3649
India (31)		2100	3186	2000	3010	6000	3518	1008	5540	3000	3000	3000	3000	3000
Venezuela (32)	1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Brazil (33)	1029		1038	1032	1031	1043	1042	1002	2006	1007	1004	1001	1000	1000
Mexico (34)	1007		999	1000	1000	1000	1000	2000	1000	1017	1031	1000	1000	1034
Nigeria (35)		1000	1000	1000	1000	1000		2000	1002		1000	1000	1000	1000
Kenya (36)		1000	1000	2200	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Tanzania (37)		1000	1000	1000	1000	1000	1000	1000	1008	1008	1000	1000	1000	1000
Israel (38)		1002	1001	1001	1000	1000	1000	1000	1000	1000	1000	1000	1000	1010
Palestinian Territories (39)		1000	1000	1000	2014	2000	2000	2000	1000	1000	1000	1000	1000	1000
Ghana (40)		1000	1000	1000	1000	1000	1000	1000	1008	1000	1000	1000	1000	1000
Uganda (41)		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Benin (42)		1000		1000			1000	1000	1000	1000	1000	1000	1000	1000
Madagascar (43)		1000		1000			1000	1000	1008	1008	1000	1000	1000	1000
Malawi (44)		1000	1000		1000		1000	1000	1000	1000	1000	1000	1000	1000
South Africa (45)		1001	1000	1000	1000	1000	1000	2000	1000	1000	1000	1000	1000	1000
Canada (46)	1355		1010	1005	1011	1007	1013	2003	1021	2025	1011	1016	1005	1009
Australia (47)	1000		1205	1005		1000	1010	1002	1002	2002	1001	1004	1003	1001
Philippines (48)		1200	1000	1000	1000	1000	1000	2000	1000	1000	1000	1000	1000	1000
Sri Lanka (49)		1033	1000	1000	1000	1030	1000	2031	1030	1062	1062		1104	1109
Vietnam (50)		1023	1015	1016	1008	1000	1000	2000	1017	1000	1000	1039	1002	1012
Thailand (51)		1410	1006	1038	1019	1000	1000	2000	1000	1000	1000	1000	1000	1000
Cambodia (52)		1000	1000	1024	1000	1000	1000	1000	1000	1000	1000	1000	1600	1000
Laos (53)		1001	1000	1000			1000	1000					1000	2504
Myanmar (54)								1020	1020	1020	1020	1020	1600	1000
New Zealand (55)		1028	750	750		750	1000	1008	500	2001	1007	1004	1001	1001



Table 3: Number of ladder (WP16) observations for WP5-years - Part 3

Country/territory (ID)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Guinea (125)							1000	1000	1008	1000	1000	1000	1000	1000
Guyana (127)			501											
Haiti (128)	505		500		504	504	504	504	504	504	504	504	504	500
Honduras (129)	1000	1000	1000	1002	1000	1002	1000	1000	1000	1000	1000	1000	1000	1000
Iceland (130)			502					1002	502		596	529	500	
Iraq (131)			990	2001	2000	2000	2000	1003	2010	1009	1011	1000		
Ireland (132)	1000		1001	500	1001	1000	1000	1000	2000	1000	1000	1000	1000	1000
Ivory Coast (134)				1000					1008	1000	1000	1000	1000	1000
Jamaica (135)	543						506		504	504			504	
Kuwait (137)	1000			2002	2004	2000	1000	1008	1013	2000	1000	1000		
Latvia (138)	1000	1017	513	515			1006	1001	1000	1002	1001	1019	1002	1021
Lesotho (139)							1000					1000	1000	
Liberia (140)		1000	1000		1000					1000	1000	1000	1000	1000
Libya (141)								1002			1006	1001	1007	1004
Lithuania (143)	1015	1007	506	500	1001	1000	1000	1000	1000	1000	1000	1000	1000	1000
Luxembourg (144)				500	1002	1000	1001	500	2000	1000	1000	1000	1000	1000
Macedonia (145)		1042		1008	1000	1018	1025	1020	1000	1024	1024	1008	1008	
Malaysia (146)	1012	1233	1000	1011	1000	1000	1000	1000	2008	1002				1000
Malta (148)				508	1008	1004	1004	500	2013	1002	1011	1004	1010	
Mauritius (150)							1000		1000		1000	1000	1000	
Mongolia (153)		1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Montenegro (154)		834		1003	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Namibia (155)		1000							1000			1000	1005	
Nepal (157)	1002	1000	1003	1002	1000	1000	2000	1050	1050	1000	1000	1000	1000	1000
Nicaragua (158)	1001	1000	1000	1012	1000	1003	1000	1000	1000	1000	1000	1000	1000	1000
Norway (160)	1001		1000					1004		2000	1005	2000	1000	1000
Oman (161)							2016							
Panama (163)	1005	1000	1004	1018	1000	1000	1001	1000	1000	1000	1000	1000	1000	1000
Paraguay (164)	1001	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	2000	
Peru (165)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Portugal (166)	1007		1002		2002	1000	1001	1001	2020	1021	1008	1000	1003	
Puerto Rico (167)	500								500					
Qatar (168)					2028	1000	1032	2000			1000			
Serbia (173)		1556		1008	1000	1001	1023	1030	1000	1000	1000	1000	1000	1000
Slovakia (175)	1018				1007	1012	1007	1004	1000	1000	1000	1000	1000	1000
Slovenia (176)	1009			500	1002	1001	1000	1001	2020	1002	1000	1000	1000	1000
Somalia (178)										1000	1000	1191		
Sudan (181)				1784	1808	2000	1000		1000					
Suriname (182)								504						
Swaziland (183)							1000						1000	
Switzerland (184)	1000			1003				1000		2010	501	1000	1000	1000
Tajikistan (185)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
The Gambia (186)													1000	1000
Togo (187)	1000		1000				1000			1000	1000	1000	1000	1000
Trinidad & Tobago (189)	508		502				504		504				504	
Tunisia (190)					1006	2085	2034	2053	1053	1056	1000	1001	1001	1001
Turkmenistan (191)					1000		1000	1000	1000	1000	1000	1000	1000	1000
United Arab Emirates (193)	1013			2054	2066	2036	2016	1000	1002	2903	1855	1850	1857	
Uruguay (194)	1004	1004	1005	1000	1000	1000	1009	1000	1000	1000	1000	1000	1000	1000
Uzbekistan (195)	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Yemen (197)		1000		2000	2000	2000	2000	1000	1000	1000	1000	1000	1000	1000
Kosovo (198)		1046	1047	1000	1017	1047	1024	1000	1001	1000	1000	1000	1000	1000
Somaliland region (199)				82000	2000	2000	1000							
Northern Cyprus (202)								500	502	2004	1000	1000		1000
South Sudan (205)										1000	1000	1000	1000	



Figure 1: County-by-country trajectory plots - part 1

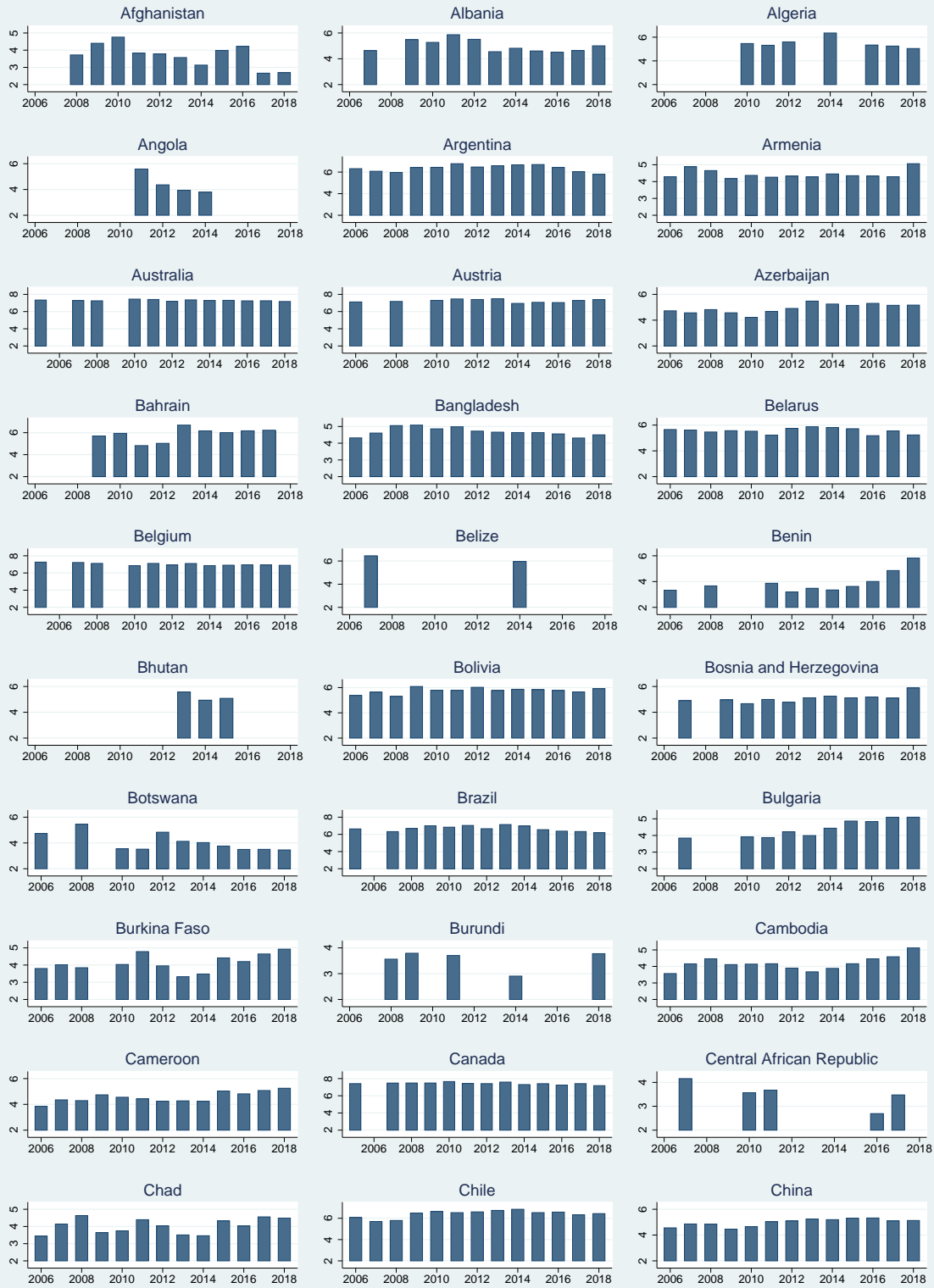


Figure 2: County-by-country trajectory plots - part 2

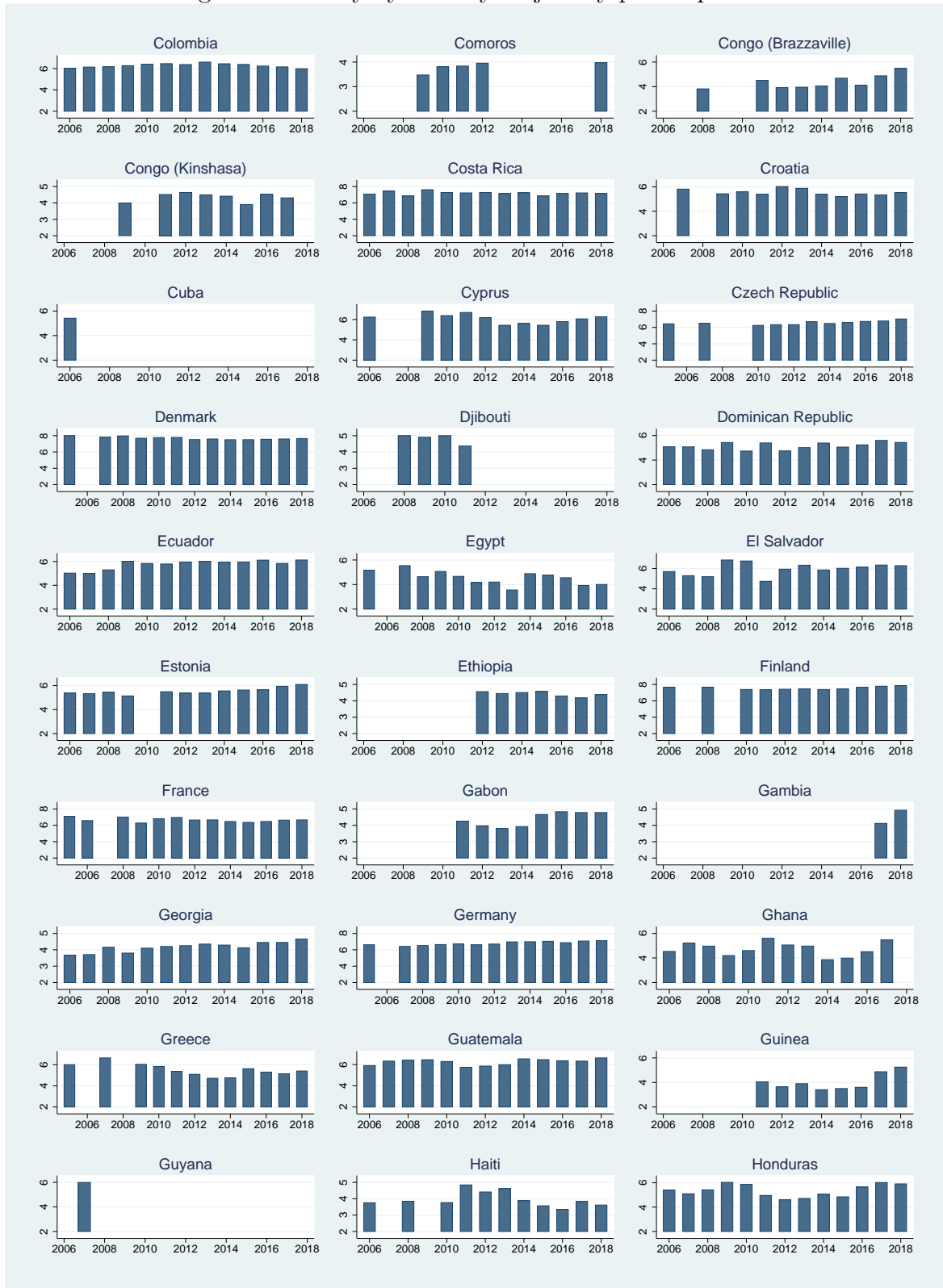


Figure 3: County-by-country trajectory plots - part 3

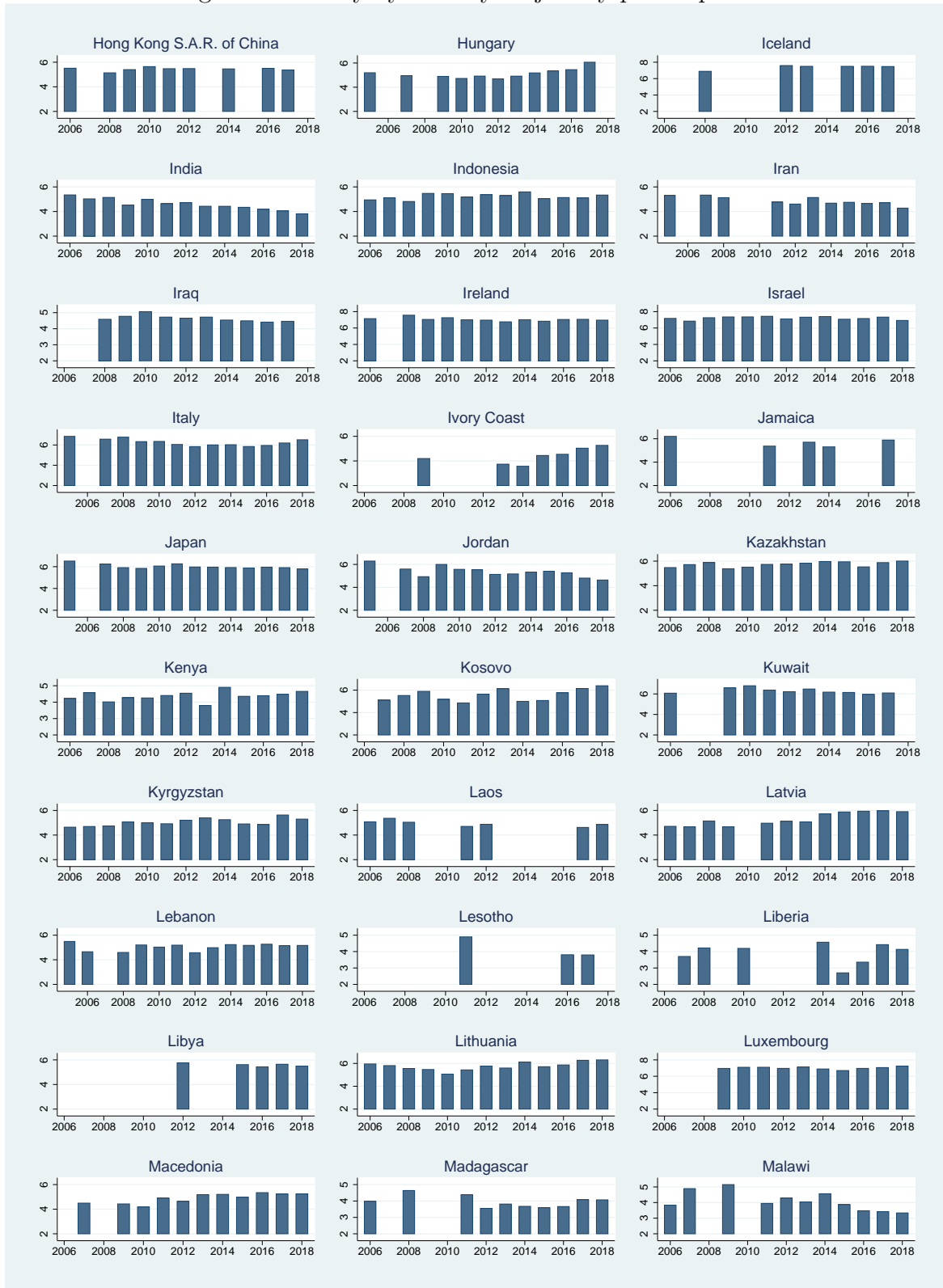


Figure 4: County-by-country trajectory plots - part 4

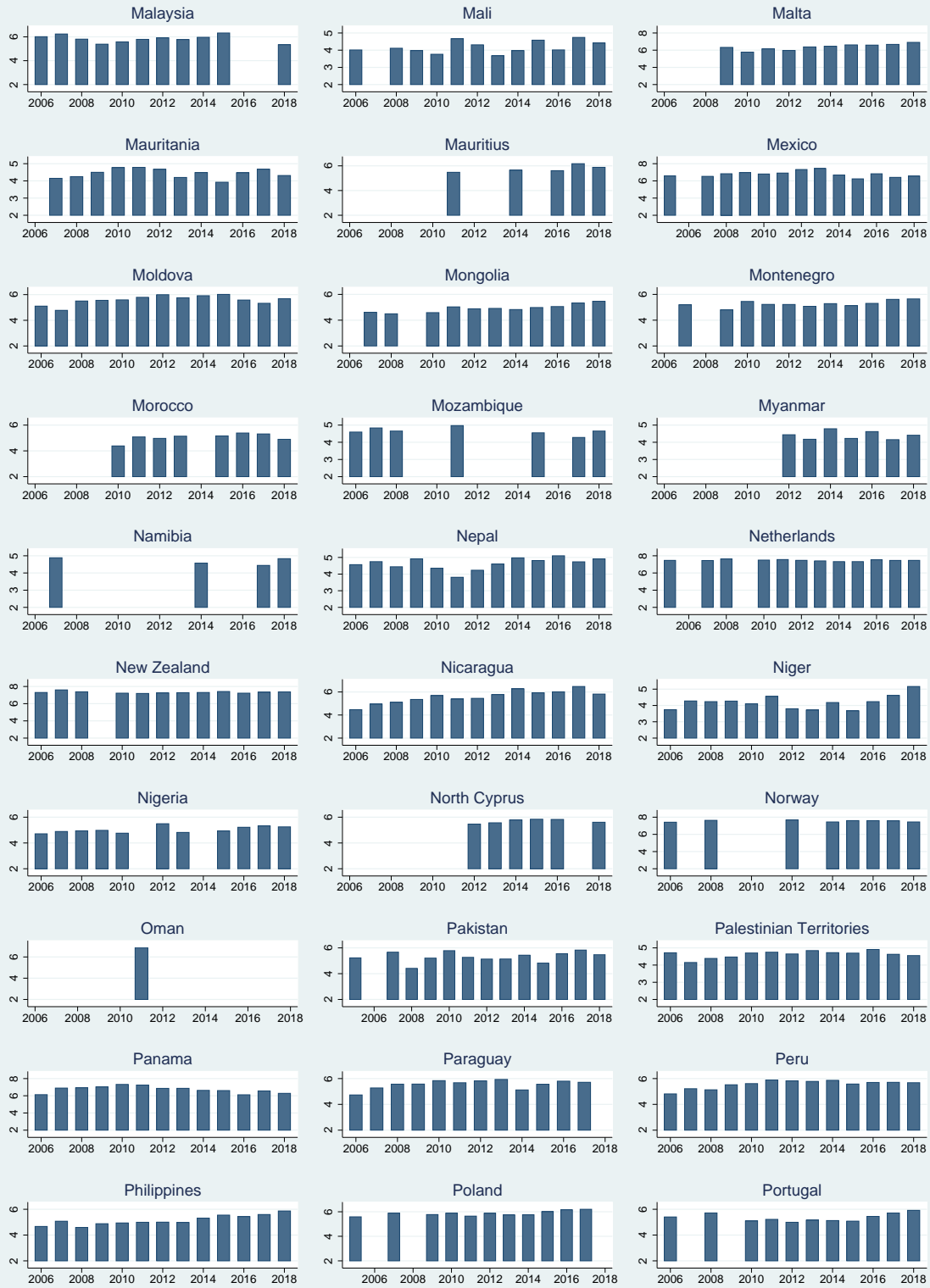


Figure 5: County-by-country trajectory plots - part 5

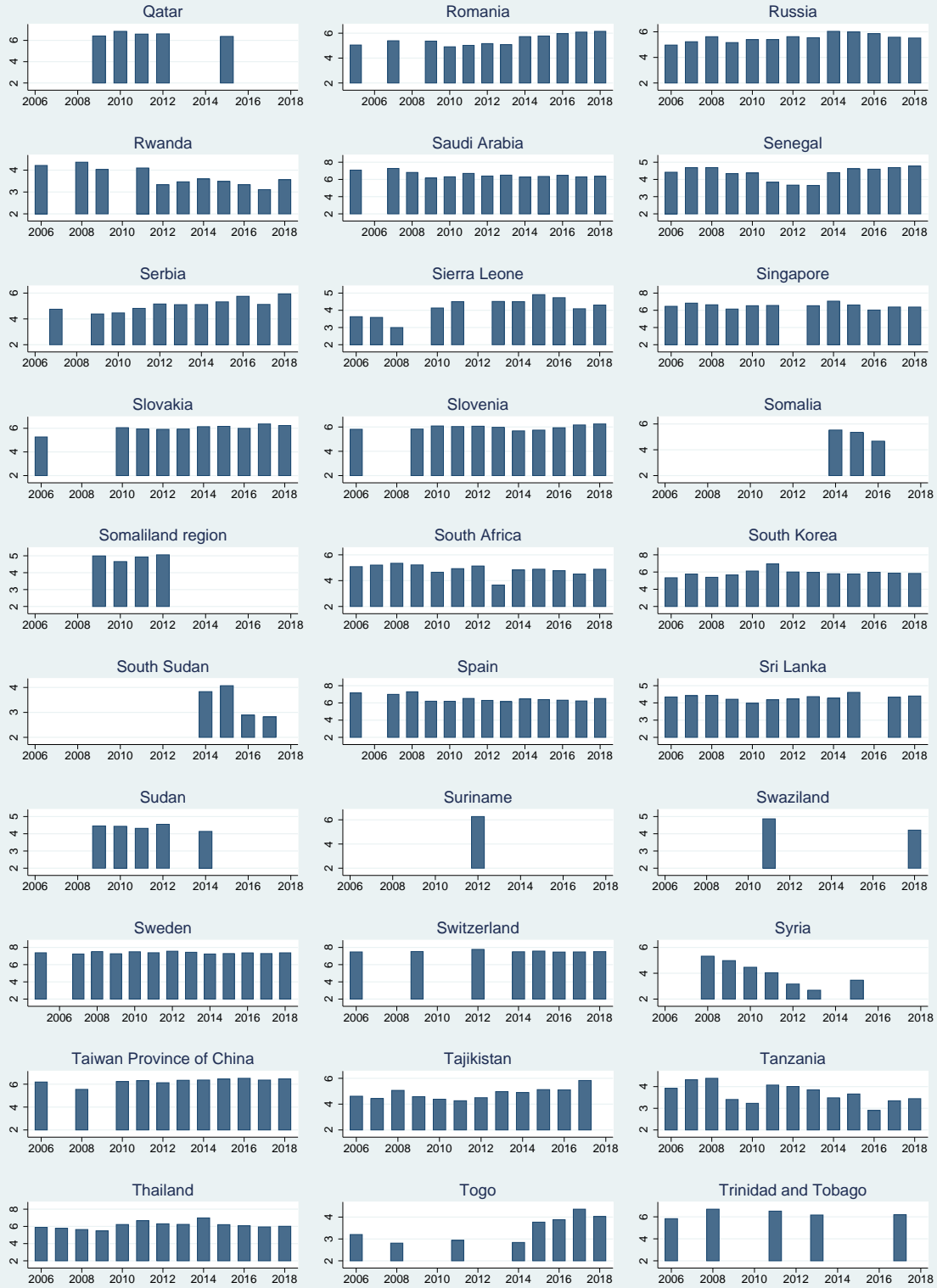


Figure 6: County-by-country trajectory plots - part 6



Table 4: Summary statistics for country-year observations with valid happiness scores  
- Fullest sample

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>	<b>N</b>
Life Ladder	5.44	1.12	2.66	8.02	1704
Positive affect	0.71	0.11	0.36	0.94	1685
Negative affect	0.27	0.08	0.08	0.70	1691
Log GDP per capita	9.22	1.19	6.46	11.77	1676
Social support	0.81	0.12	0.29	0.99	1691
Healthy life expectancy at birth	63.11	7.58	32.3	76.8	1676
Freedom to make life choices	0.73	0.14	0.26	0.99	1675
Generosity	0	0.16	-0.34	0.68	1622
Perceptions of corruption	0.75	0.19	0.04	0.98	1608

Table 5: Summary statistics for country-year observations with valid happiness scores  
- Period from 2005 to 2008

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>	<b>N</b>
Life Ladder	5.44	1.13	2.81	8.02	328
Positive affect	0.71	0.1	0.36	0.89	324
Negative affect	0.25	0.07	0.09	0.47	326
Log GDP per capita	9.1	1.21	6.49	11.47	328
Social support	0.81	0.13	0.29	0.98	326
Healthy life expectancy at birth	61.54	8.43	40.3	74.28	328
Freedom to make life choices	0.71	0.15	0.26	0.97	319
Generosity	0.01	0.17	-0.32	0.48	293
Perceptions of corruption	0.77	0.18	0.06	0.98	313

Table 6: Summary statistics for country-year observations with valid happiness scores  
- Period from 2008 to 2010

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>	<b>N</b>
Life Ladder	5.46	1.11	2.81	7.97	348
Positive affect	0.71	0.11	0.36	0.9	341
Negative affect	0.24	0.08	0.08	0.47	343
Log GDP per capita	9.16	1.2	6.46	11.74	346
Social support	0.81	0.12	0.29	0.98	343
Healthy life expectancy at birth	62.4	7.98	32.3	74.83	346
Freedom to make life choices	0.70	0.15	0.26	0.97	341
Generosity	0	0.16	-0.32	0.53	345
Perceptions of corruption	0.76	0.19	0.04	0.98	337

Table 7: Summary statistics for country-year observations with valid happiness scores  
- Period from 2016 to 2018

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min.</b>	<b>Max.</b>	<b>N</b>
Life Ladder	5.45	1.13	2.66	7.86	425
Positive affect	0.71	0.11	0.42	0.92	423
Negative affect	0.29	0.09	0.09	0.6	423
Log GDP per capita	9.27	1.2	6.47	11.46	409
Social support	0.81	0.12	0.29	0.98	424
Healthy life expectancy at birth	64.27	7.05	44.9	76.8	416
Freedom to make life choices	0.78	0.12	0.3	0.99	422
Generosity	-0.01	0.16	-0.34	0.66	406
Perceptions of corruption	0.74	0.19	0.05	0.97	396



Table 8: Regression reported in Table 2.1 of WHR 2018, and replication using updated data

	WHR2018	Current
	(1)	(2)
lngdp	0.311 (0.064)***	0.318 (0.066)***
countOnFriends	2.447 (0.39)***	2.422 (0.381)***
Health life expectancy	0.032 (0.009)***	0.033 (0.01)***
freedom	1.189 (0.302)***	1.164 (0.3)***
Generosity	0.644 (0.274)**	0.635 (0.277)**
corrupt	-.542 (0.284)*	-.540 (0.294)*
Year 2005	0.458 (0.094)***	0.447 (0.094)***
Year 2006	-.030 (0.061)	-.026 (0.062)
Year 2007	0.239 (0.06)***	0.237 (0.061)***
Year 2008	0.319 (0.059)***	0.32 (0.059)***
Year 2009	0.22 (0.058)***	0.217 (0.058)***
Year 2010	0.138 (0.046)***	0.141 (0.047)***
Year 2011	0.147 (0.047)***	0.147 (0.048)***
Year 2012	0.127 (0.041)***	0.13 (0.041)***
Year 2013	0.06 (0.04)	0.046 (0.042)
Year 2015	0.012 (0.041)	0.01 (0.041)
Year 2016	-.034 (0.048)	-.039 (0.048)
Year 2017	0.058 (0.057)	0.043 (0.055)
Year 2018		0.081 (0.064)
Obs.	1394	1516
e(N-clust)	157	157
e(r2-a)	0.742	0.74

Notes: 1) Column 1 reports estimates from a pooled OLS regression based on data used in the WHR 2018 (sample period 2005-2017). Column 2 replicates the regression with updated data that include observations from the year 2018 and a few countries that were surveyed in 2017 but their data were released late. 2).Standard errors in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at 10 percent, 5 percent and 1 percent levels. All standard errors are cluster-adjusted at the country level. The row “e(N-clust)” indicates the number of countries. 3). See section “Data Sources and Variable Definitions” for more information.

Table 9: (Table 2.1 in WHR 2018 Updated With the Most Recent Data, with year fixed effects): Regressions to Explain Average Happiness across Countries (Pooled OLS)

	Ladder	PosAffect	NegAffect	LadderAgain
	(1)	(2)	(3)	(4)
Log GDP per capita	0.318 (0.066)***	-.011 (0.01)	0.008 (0.008)	0.338 (0.065)***
Social support	2.422 (0.381)***	0.253 (0.05)***	-.313 (0.051)***	1.977 (0.397)***
Healthy life expectancy at birth	0.033 (0.01)***	0.001 (0.001)	0.002 (0.001)	0.03 (0.01)***
Freedom to make life choices	1.164 (0.3)***	0.352 (0.04)***	-.072 (0.041)*	0.461 (0.287)
Generosity	0.635 (0.277)**	0.137 (0.03)***	0.008 (0.028)	0.351 (0.279)
Perceptions of corruption	-.540 (0.294)*	0.025 (0.027)	0.094 (0.024)***	-.612 (0.287)**
Positive affect				2.063 (0.384)***
Negative affect				0.242 (0.429)
Year 2005	0.447 (0.094)***	-.007 (0.009)	0.021 (0.008)**	0.459 (0.09)***
Year 2006	-.026 (0.062)	0.01 (0.009)	-.004 (0.009)	-.037 (0.061)
Year 2007	0.237 (0.061)***	0.017 (0.009)*	-.028 (0.007)***	0.218 (0.06)***
Year 2008	0.32 (0.059)***	0.021 (0.007)***	-.039 (0.007)***	0.292 (0.063)***
Year 2009	0.217 (0.058)***	0.015 (0.008)*	-.025 (0.008)***	0.195 (0.058)***
Year 2010	0.141 (0.047)***	0.011 (0.007)	-.030 (0.006)***	0.128 (0.048)***
Year 2011	0.147 (0.048)***	0.0002 (0.008)	-.025 (0.006)***	0.156 (0.049)***
Year 2012	0.13 (0.041)***	0.011 (0.006)*	-.019 (0.006)***	0.114 (0.043)***
Year 2013	0.046 (0.042)	0.01 (0.005)*	-.009 (0.006)	0.03 (0.042)
Year 2015	0.01 (0.041)	-.0007 (0.005)	-.00004 (0.004)	0.014 (0.04)
Year 2016	-.039 (0.048)	-.005 (0.005)	0.015 (0.005)***	-.029 (0.046)
Year 2017	0.043 (0.055)	-.013 (0.006)**	0.018 (0.006)***	0.069 (0.052)
Year 2018	0.081 (0.064)	-.010 (0.007)	0.025 (0.007)***	0.099 (0.061)
Obs.	1516	1513	1515	1512
e(N-clust)	157	157	157	157
e(r2-a)	0.74	0.476	0.27	0.76

Notes: 1). Standard errors in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at 10 percent, 5 percent and 1 percent levels.<sup>18</sup> All standard errors are cluster-adjusted at the country level. The row “e(N-clust)” indicates the number of countries. 2). See section “Data Sources and Variable Definitions” for more information.

Table 10: (Table 2.1 in WHR 2018 Updated With the Most Recent Data, without year fixed effects): Regressions to Explain Average Happiness across Countries (Pooled OLS)

	Ladder	PosAffect	NegAffect	LadderAgain
	(1)	(2)	(3)	(4)
Log GDP per capita	0.328 (0.065)***	-.010 (0.009)	0.006 (0.008)	0.348 (0.065)***
Social support	2.473 (0.374)***	0.267 (0.048)***	-.335 (0.051)***	1.920 (0.391)***
Healthy life expectancy at birth	0.031 (0.009)***	0.001 (0.001)	0.002 (0.001)*	0.029 (0.009)***
Freedom to make life choices	1.018 (0.282)***	0.33 (0.037)***	-.033 (0.038)	0.327 (0.269)
Generosity	0.684 (0.274)**	0.145 (0.029)***	-.006 (0.028)	0.38 (0.277)
Perceptions of corruption	-.550 (0.288)*	0.024 (0.027)	0.098 (0.024)***	-.600 (0.285)**
Positive affect				2.106 (0.392)***
Negative affect				0.019 (0.406)
year-1				
year-2				
year-3				
year-4				
year-5				
year-6				
year-7				
year-8				
year-9				
year-11				
year-12				
year-13				
year-14				
Obs.	1516	1513	1515	1512
e(N-clust)	157	157	157	157
e(r2-a)	0.735	0.473	0.224	0.756

Notes: 1). Standard errors in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at 10 percent, 5 percent and 1 percent levels.<sup>19</sup> All standard errors are cluster-adjusted at the country level. The row “e(N-clust)” indicates the number of countries. 2). See section “Data Sources and Variable Definitions” for more information.

Figure 7: Ranking of Happiness: 2016-18 (Part 1)

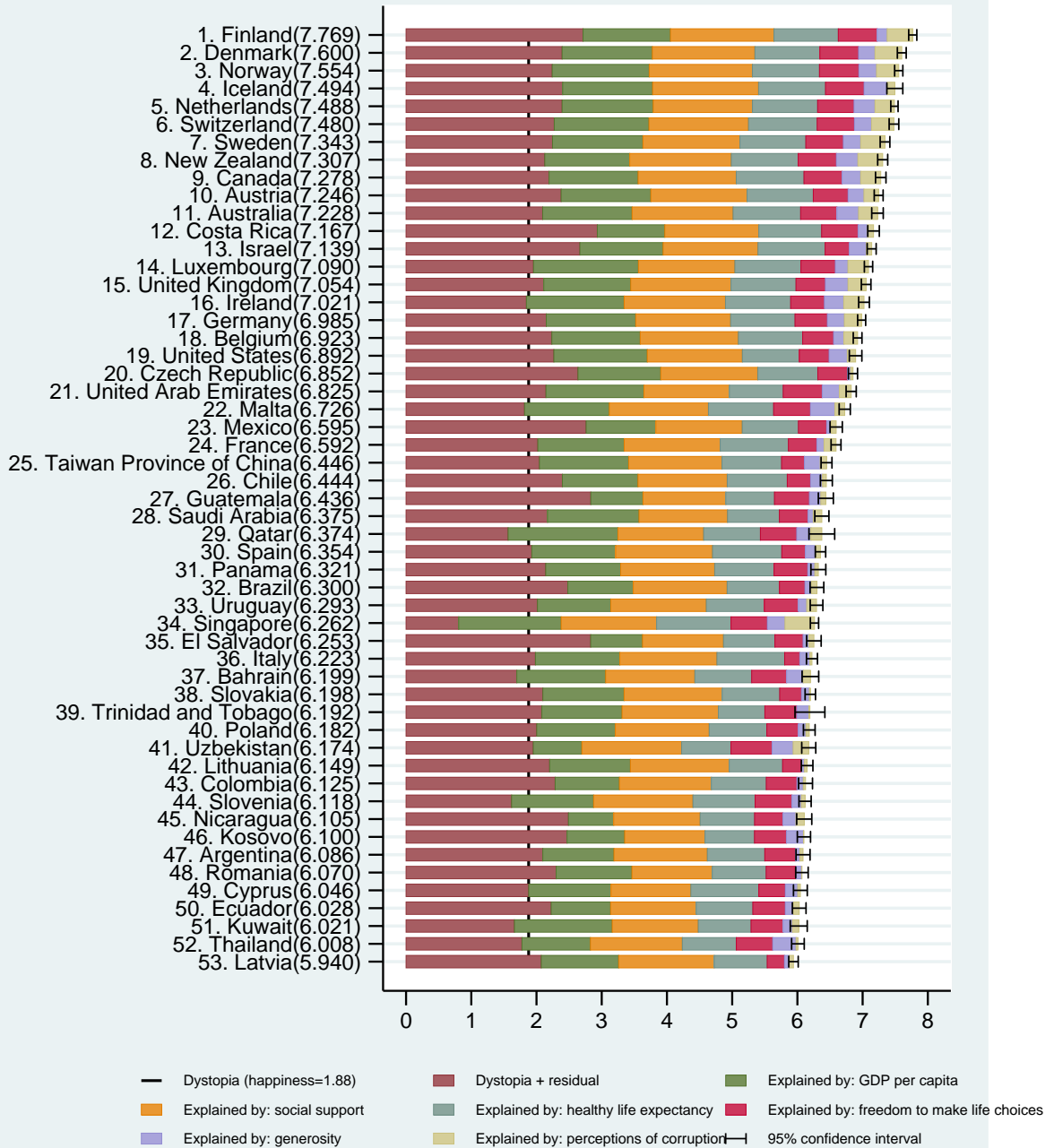


Figure 8: Ranking of Happiness: 2016-18 (Part 2)

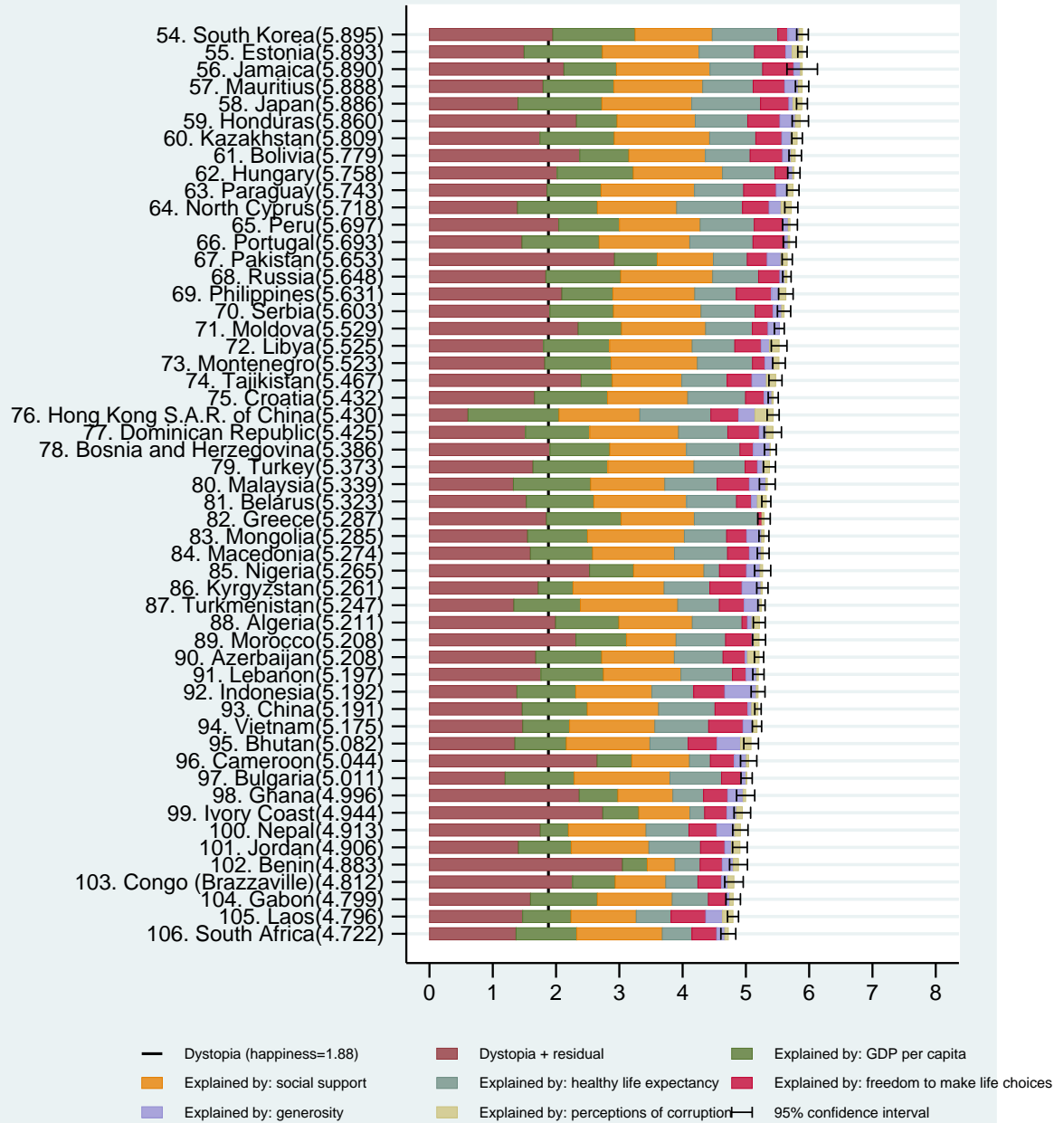


Figure 9: Ranking of Happiness: 2016-18 (Part 3)

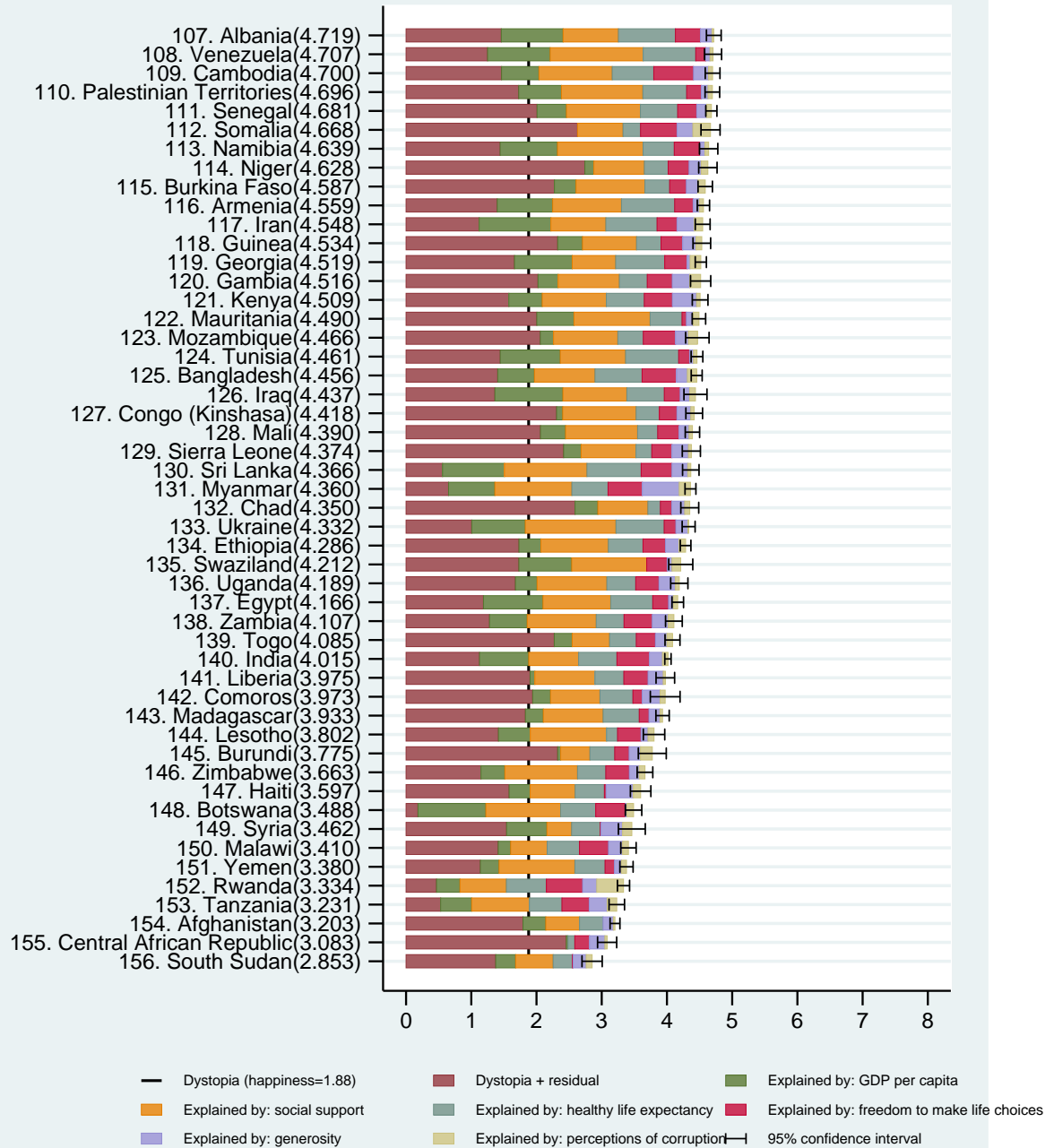


Figure 10: Ranking of Happiness: 2016-18 (Part 1)

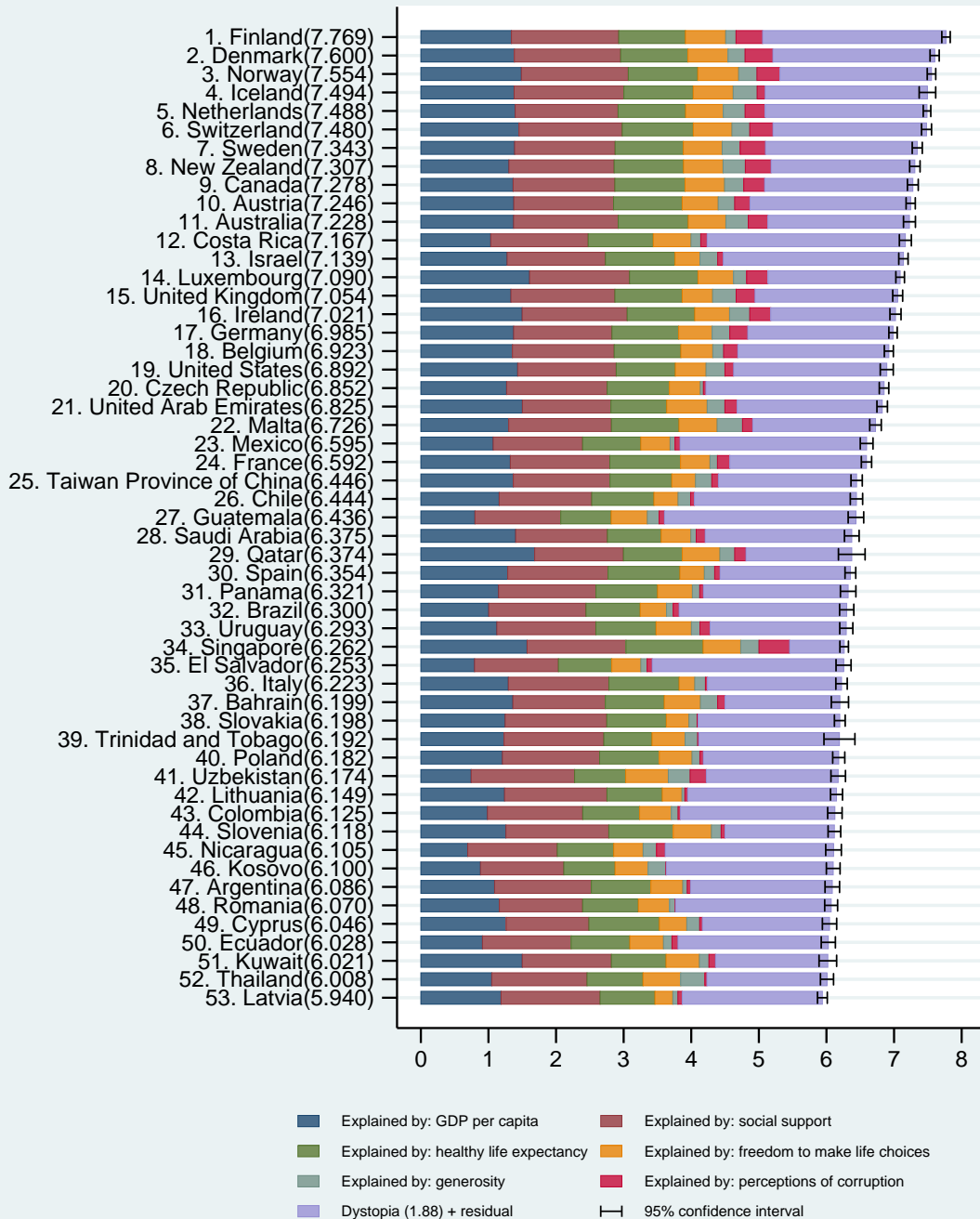


Figure 11: Ranking of Happiness: 2016-18 (Part 2)

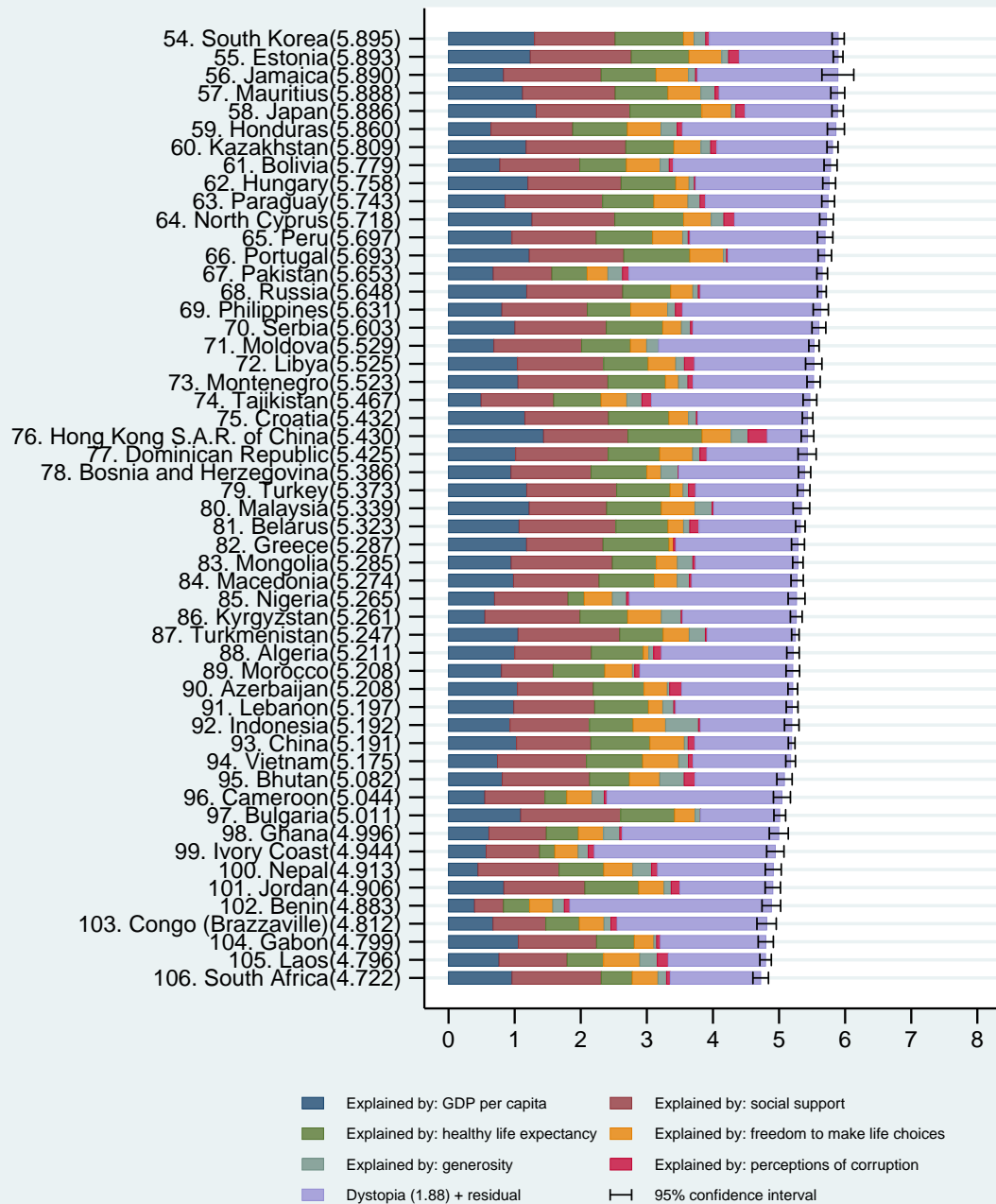




Figure 12: Ranking of Happiness: 2016-18 (Part 3)

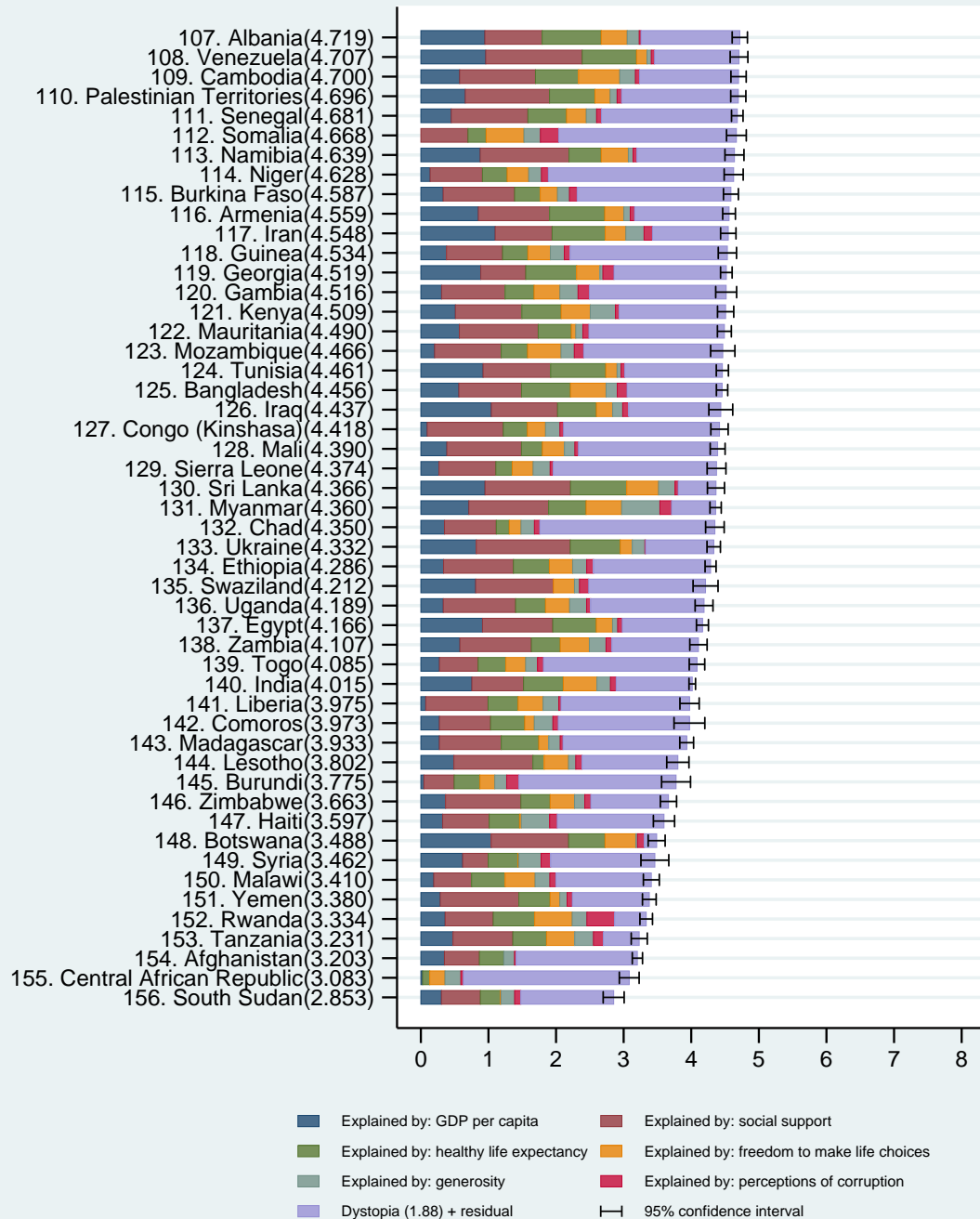


Table 11: Countries/territories that have valid happiness scores in 2015 but not in 2016-2018

Country name	Sample size in 2015
Syria	963
Bhutan	1011
Qatar	968

Table 12: Countries that used imputed corrupt based on WGI control of corruption indicators

Country name	Imputation indicator: corrupt is imputed based on WGI's control of corruption in
Saudi Arabia	1
Jordan	1
China	1
Bahrain	1
Kuwait	1
Qatar	1
Turkmenistan	1
United Arab Emirates	1

Table 13: Countries/territories that are not covered in the decomposition exercise due to missing factors; an empty table means all countries are covered

Country name	Country	Missing factors
--------------	---------	-----------------

Note: Any countries/territories that are missing per-capita GDP automatically miss Generosity, because we adjust the latter to filter out the influence of per-capita GDP. In addition, any countries/territories that are missing the variable of corruption perception are indeed missing the perception on both business and government.

Figure 13: Changes in Happiness: from 2005-08 to 2016-18 (Part 1)

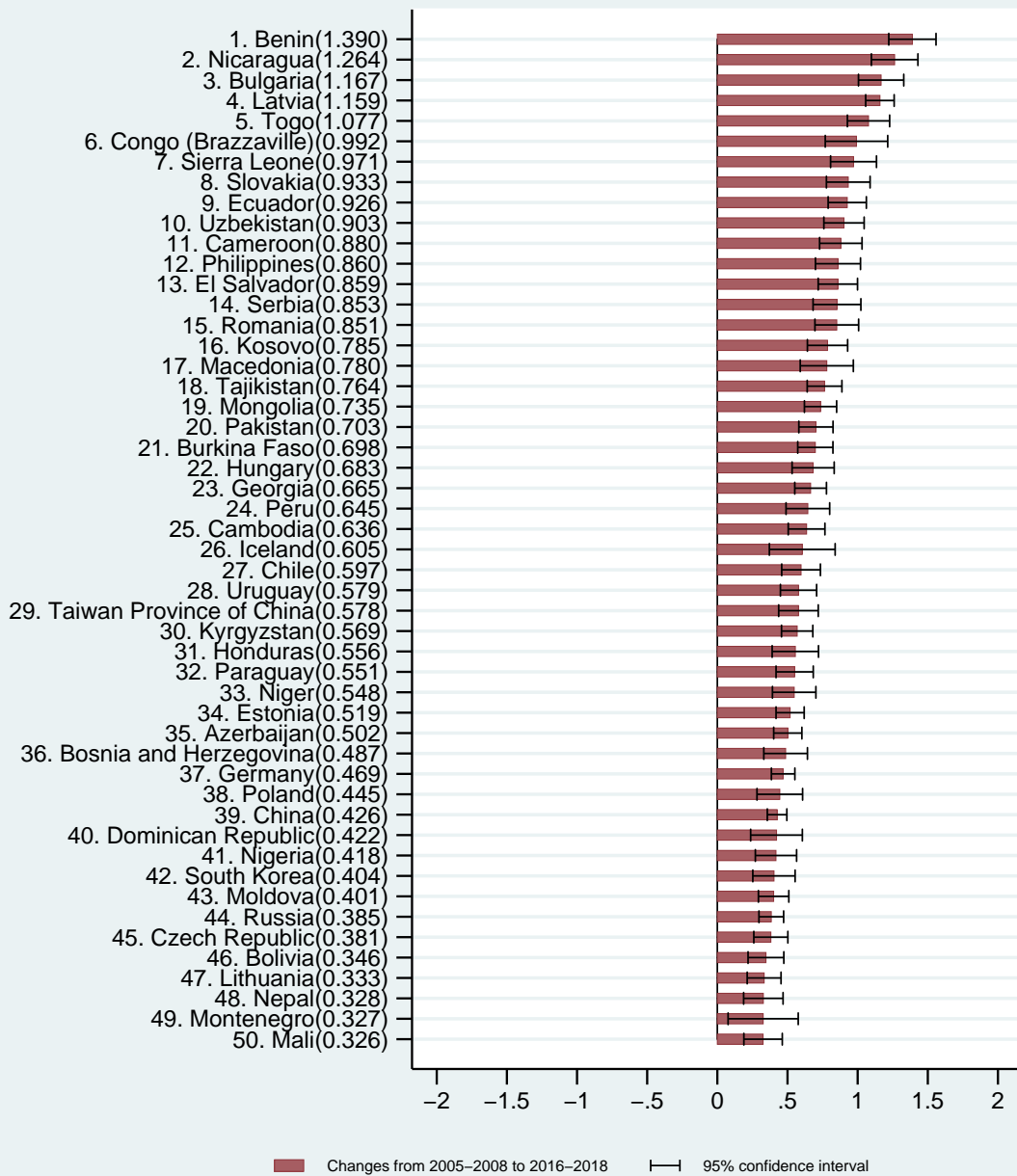


Figure 14: Changes in Happiness: from 2005-08 to 2016-18 (Part 2)



Figure 15: Changes in Happiness: from 2005-08 to 2016-18 (Part 3)

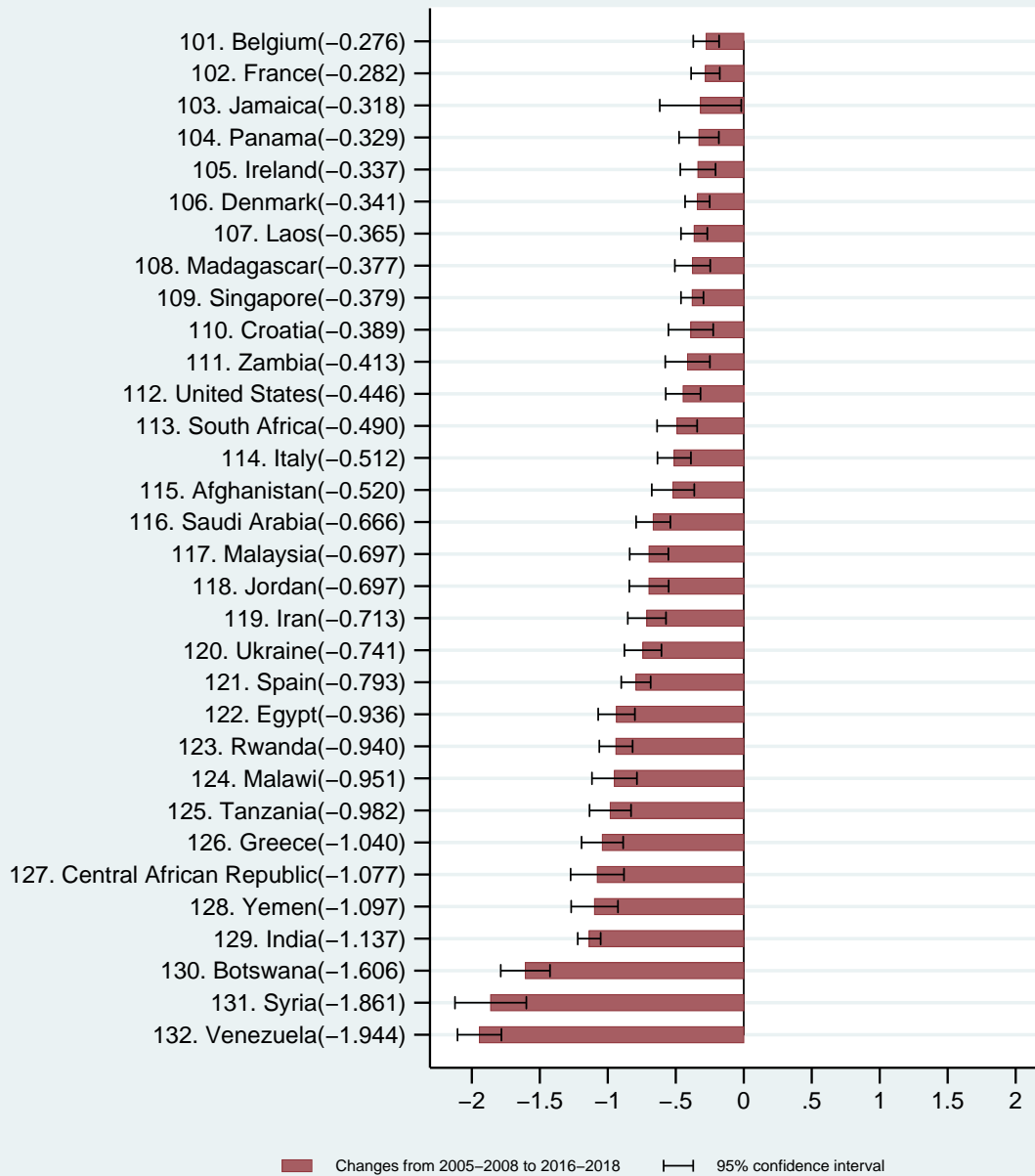


Table 14: Countries/territories that are in the 2016-2018 happiness ranking (including several that use 2015 survey), but do not have ladder observations in the 2005-2008 period

Country name
Algeria
Bahrain
Bhutan
Comoros
Congo (Kinshasa)
Ethiopia
Gabon
Gambia
Guinea
Ivory Coast
Lesotho
Libya
Luxembourg
Malta
Mauritius
Morocco
Myanmar
North Cyprus
Qatar
Somalia
South Sudan
Swaziland
Tunisia
Turkmenistan

## Ranking of the Six Factors Used to Explain Happiness Scores

The next set of figures are rankings of countries by the six underlying factors used to explain international differences in happiness scores, namely GDP per person, healthy life expectancy, social support, perceived freedom to make life choice, generosity and perception of corruption. The rankings are based on national averages over the period from 2016 to 2018. A few countries were not surveyed in the 2016-2018 period; their 2015 surveys are used for the rankings. The ranking figures do not show imputed data. As we explain when describing our imputation algorithm, we do not use the imputed values in any of our headline results including the happiness rankings. The only place where we use them is when we try to decompose a country's average happiness score into components explained by the six factors. The imputation involves only a small number of countries. Here, we avoid relying on the imputation

to generate the rankings. If a country is missing the information about corruption perceptions, for example, they won't show up in the corruption ranking, thus the ranking for corruption will cover a smaller number of countries than the ranking of overall happiness.

Figure 16: Ranking of Natural Log of Per-Capita GDP: 2016-18; bars show natural logs, dollar values are shown on the Y axis after country names (Part 1)

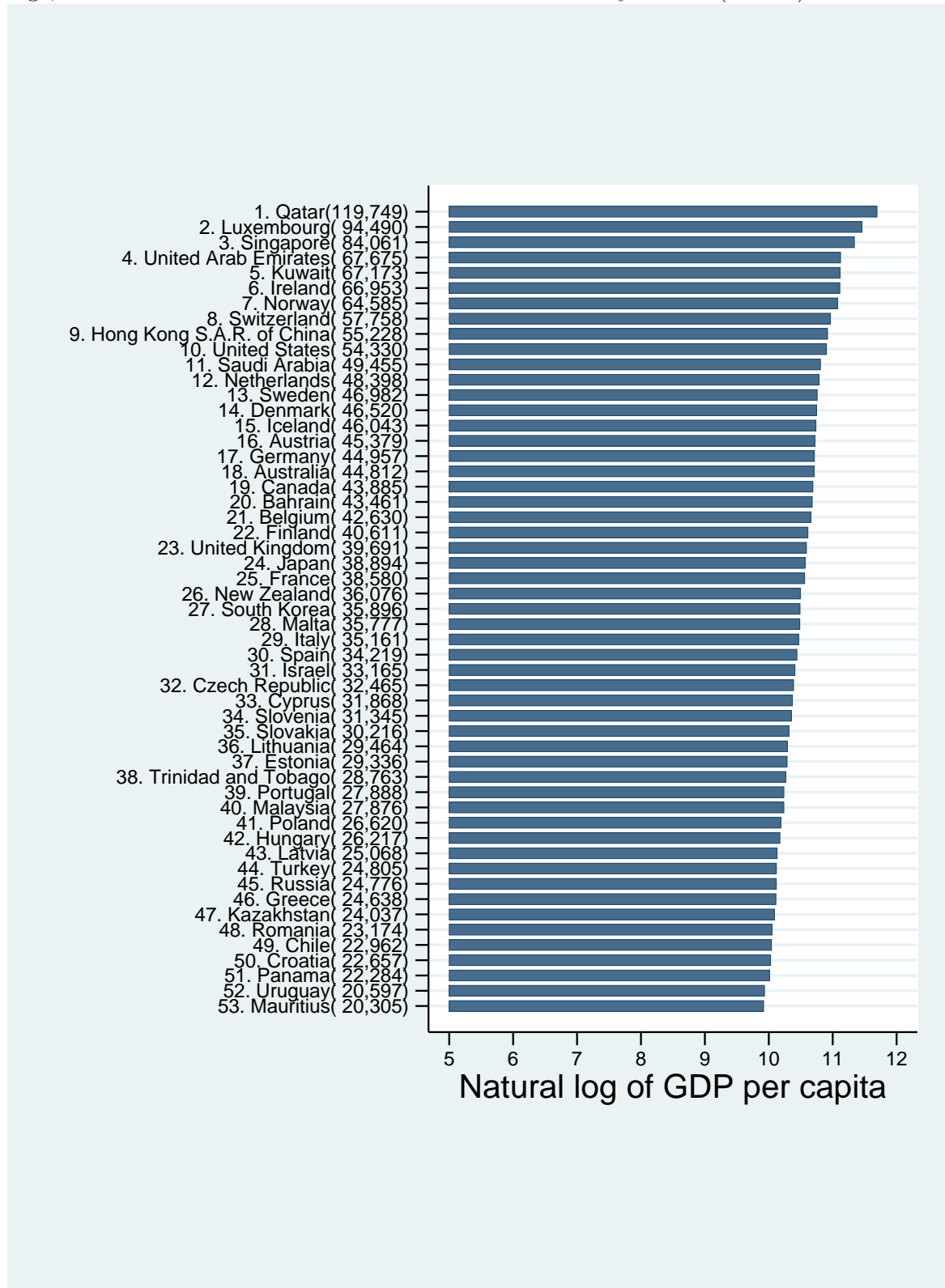




Figure 17: Ranking of Natural Log of Per-Capita GDP: 2016-18; bars show natural logs, dollar values are shown on the Y axis after country names (Part 2)

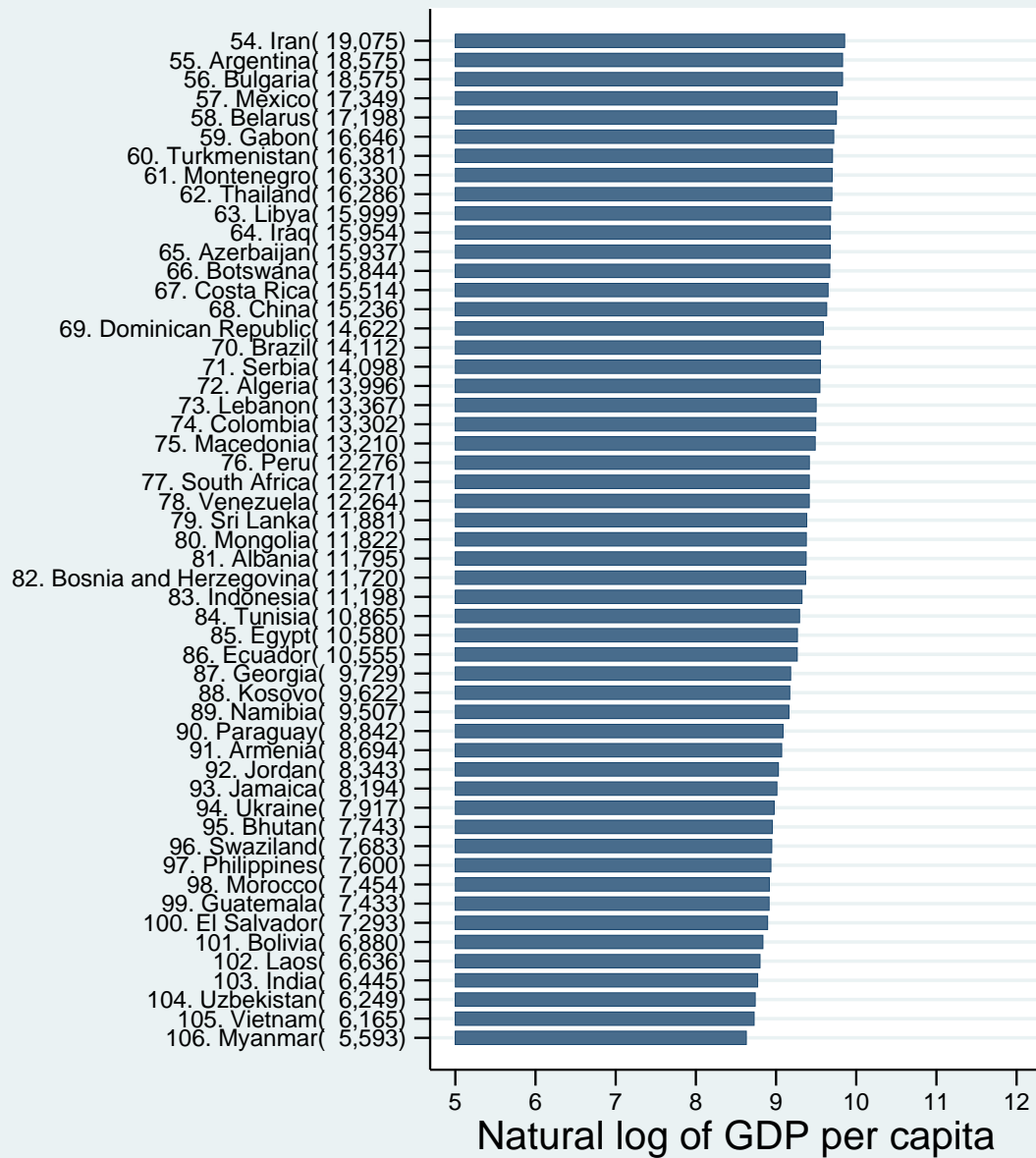


Figure 18: Ranking of Natural Log of Per-Capita GDP: 2016-18; bars show natural logs, dollar values are shown on the Y axis after country names (Part 3)

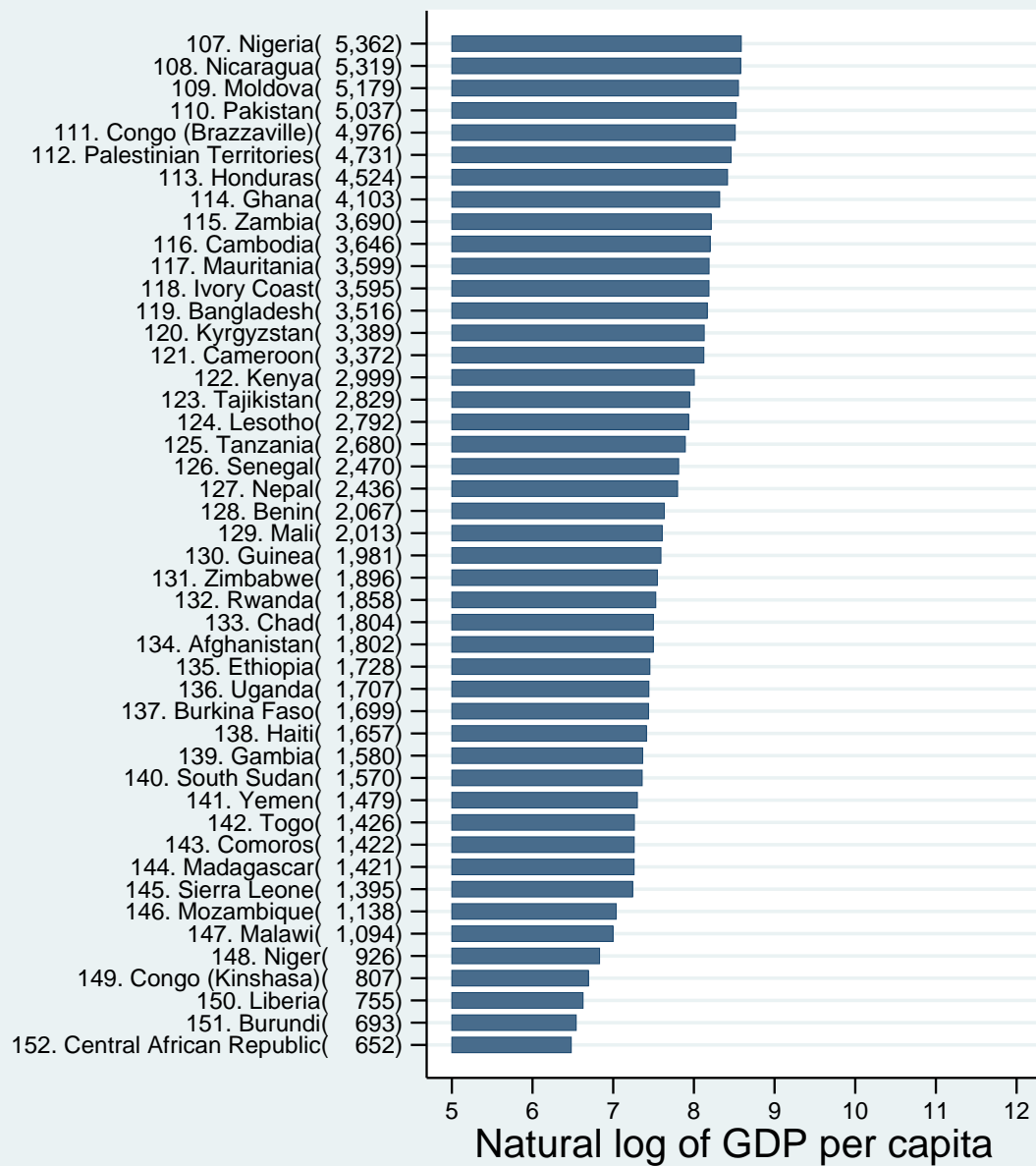


Figure 19: Ranking of Social Support: 2016-18 (Part 1)

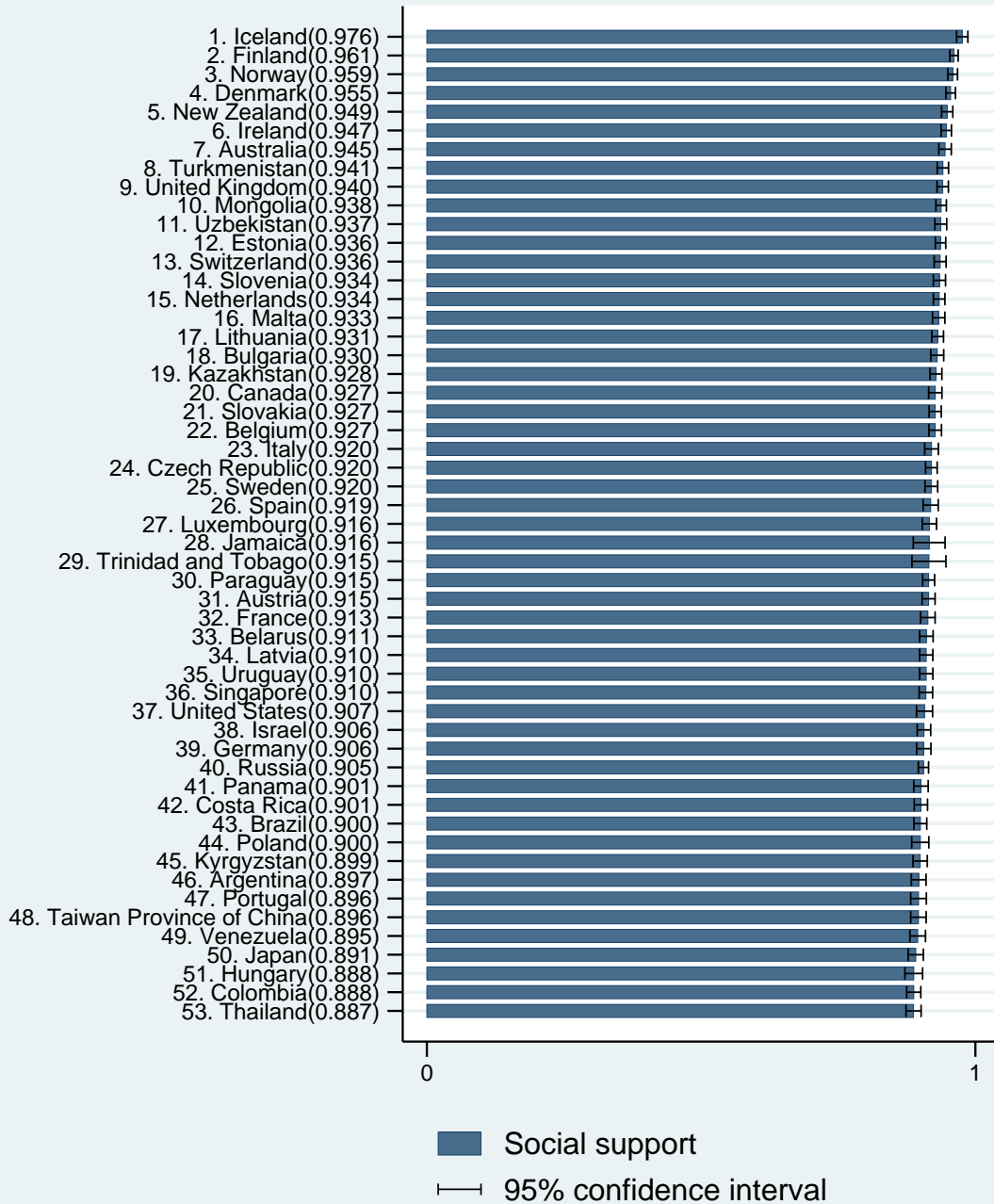


Figure 20: Ranking of Social Support: 2016-18 (Part 2)

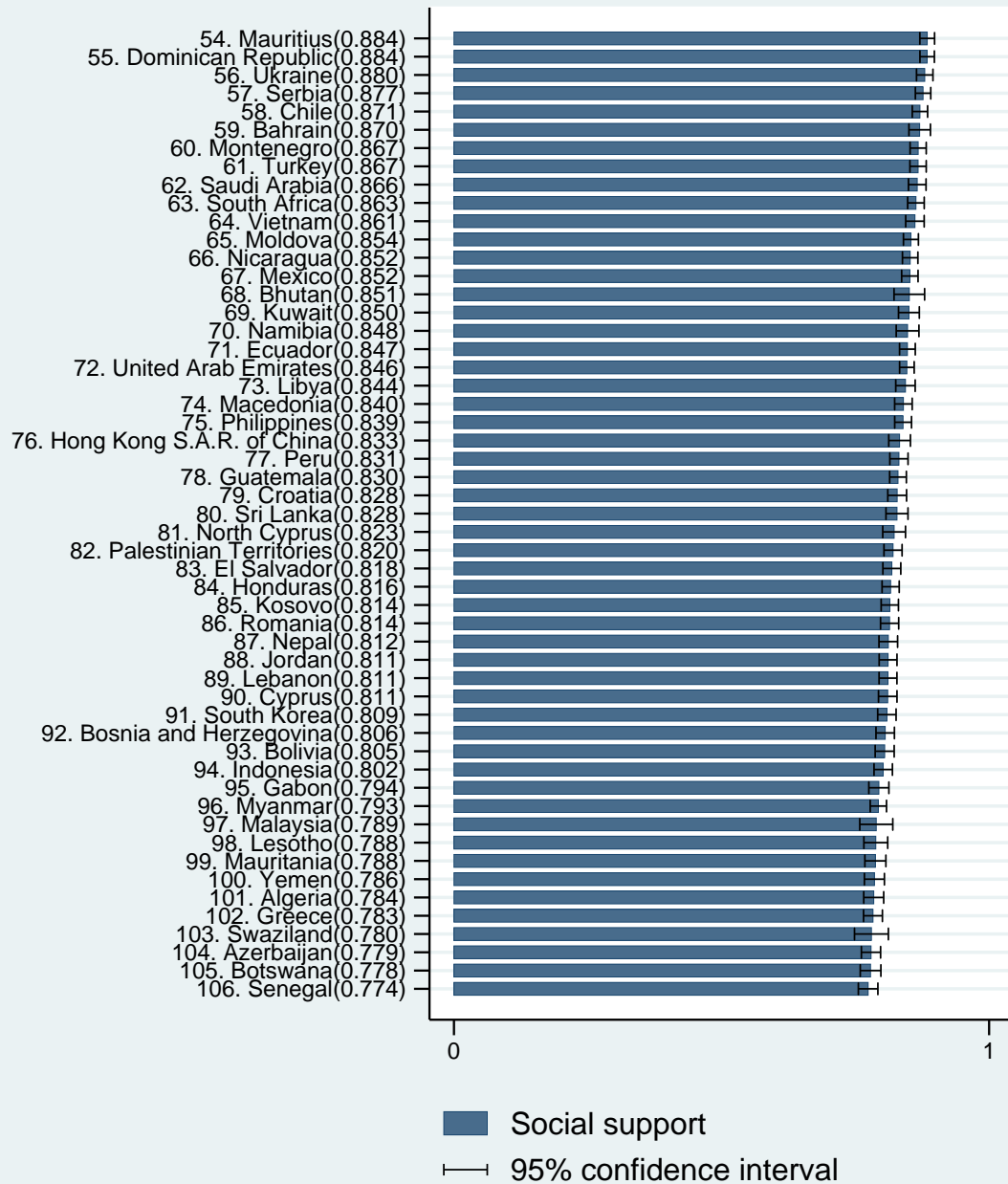


Figure 21: Ranking of Social Support: 2016-18 (Part 3)

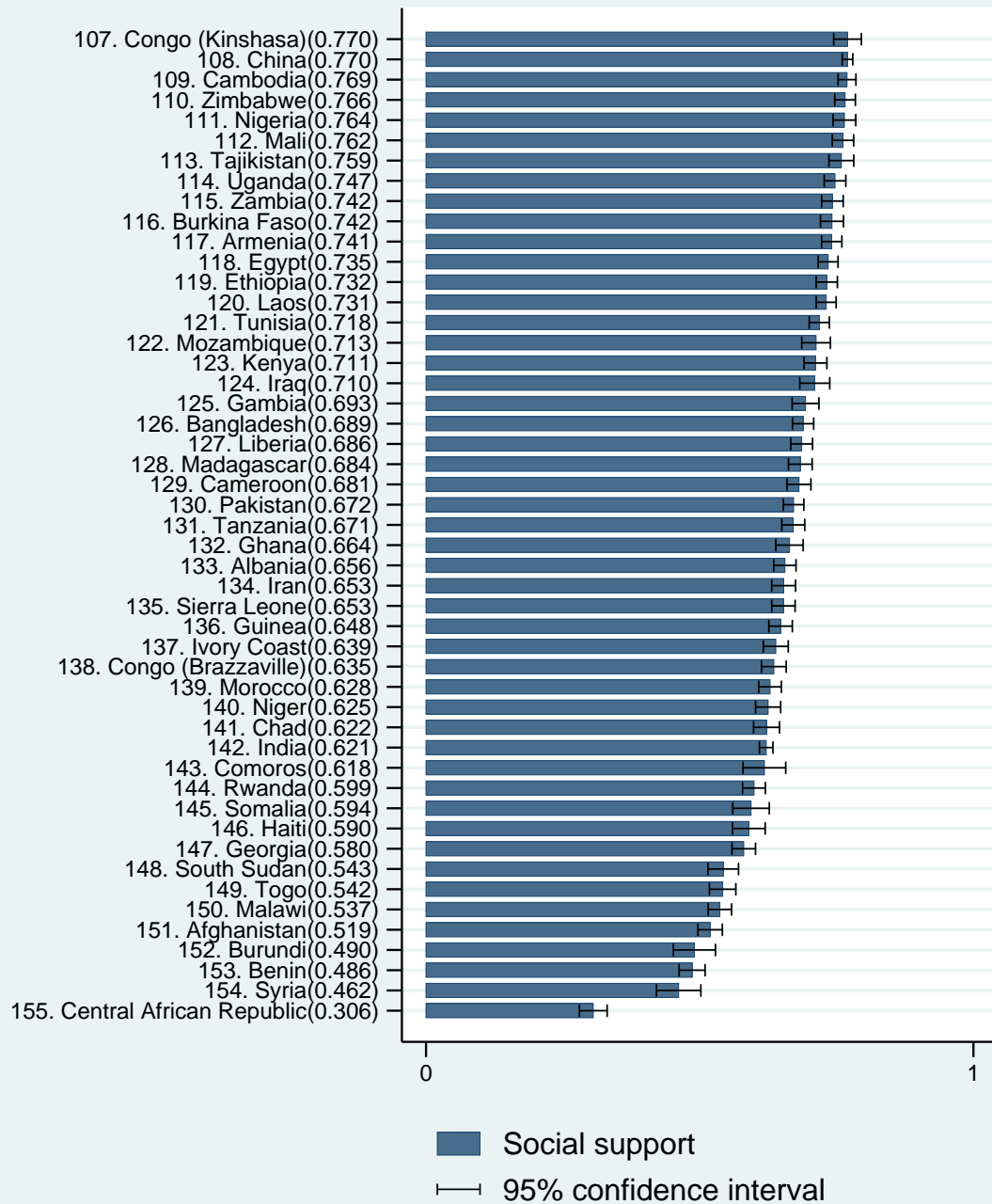


Figure 22: Ranking of Healthy Life Expectancy: 2016-18 (Part 1)

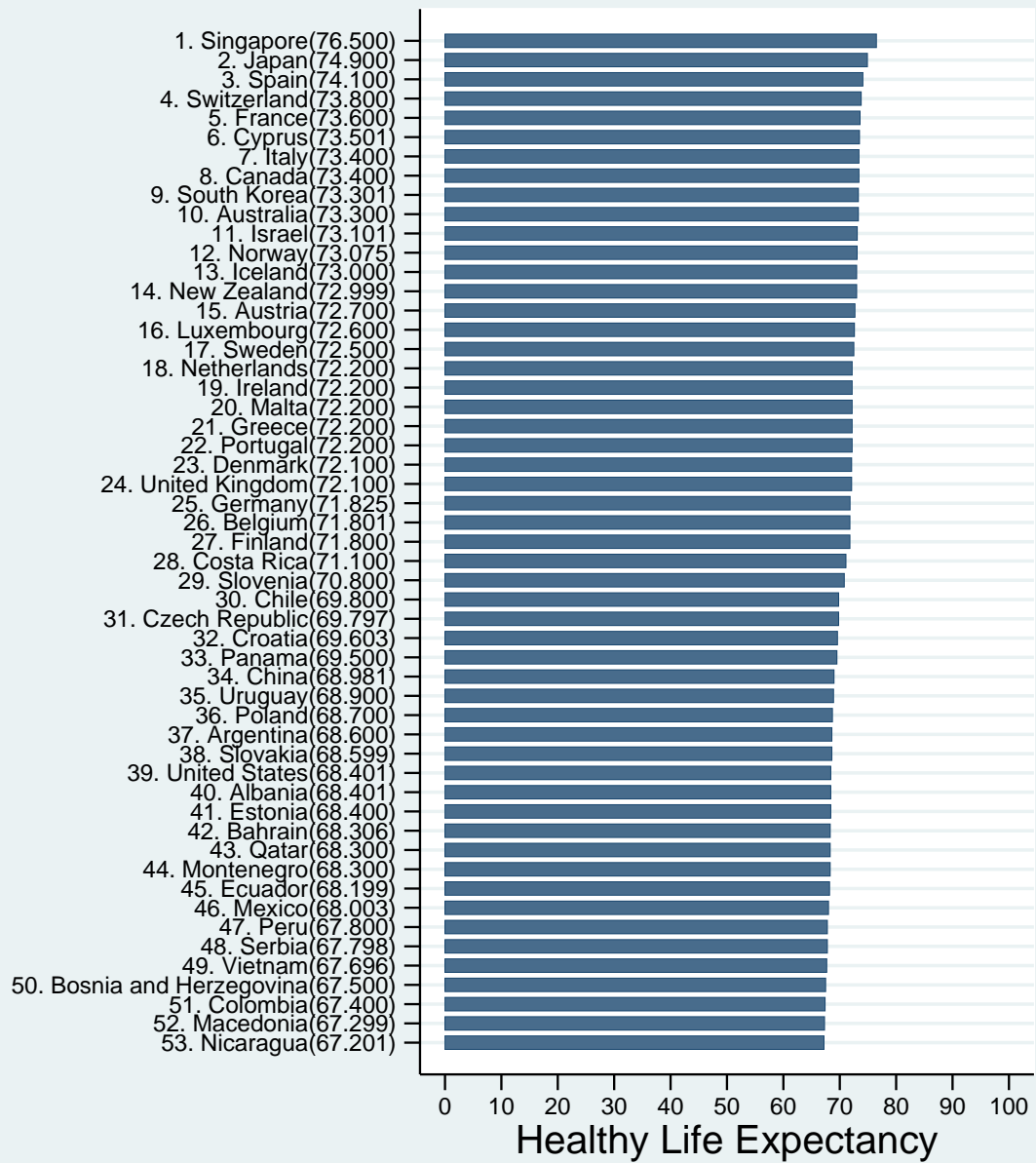


Figure 23: Ranking of Healthy Life Expectancy: 2016-18 (Part 2)

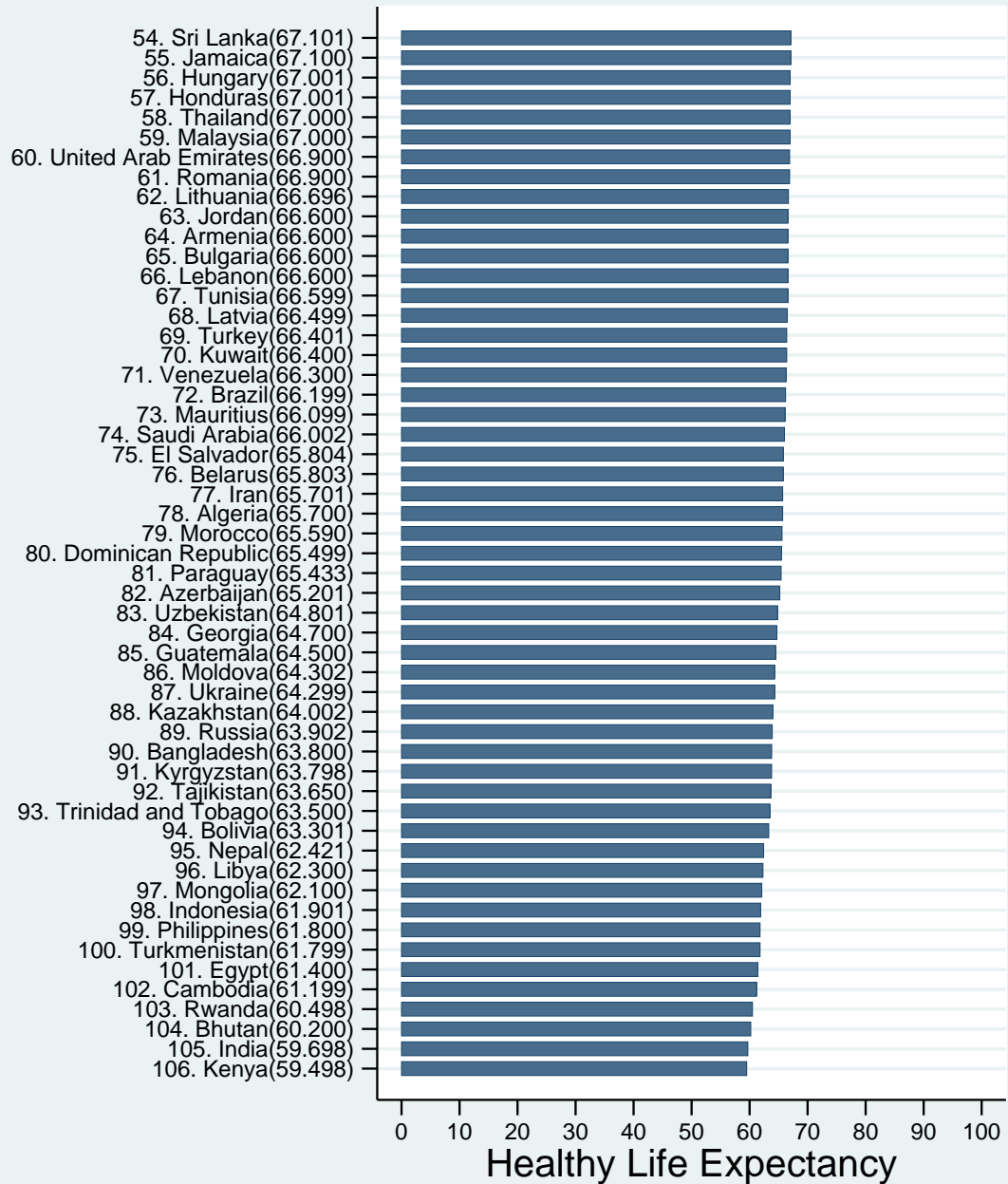


Figure 24: Ranking of Healthy Life Expectancy: 2016-18 (Part 3)

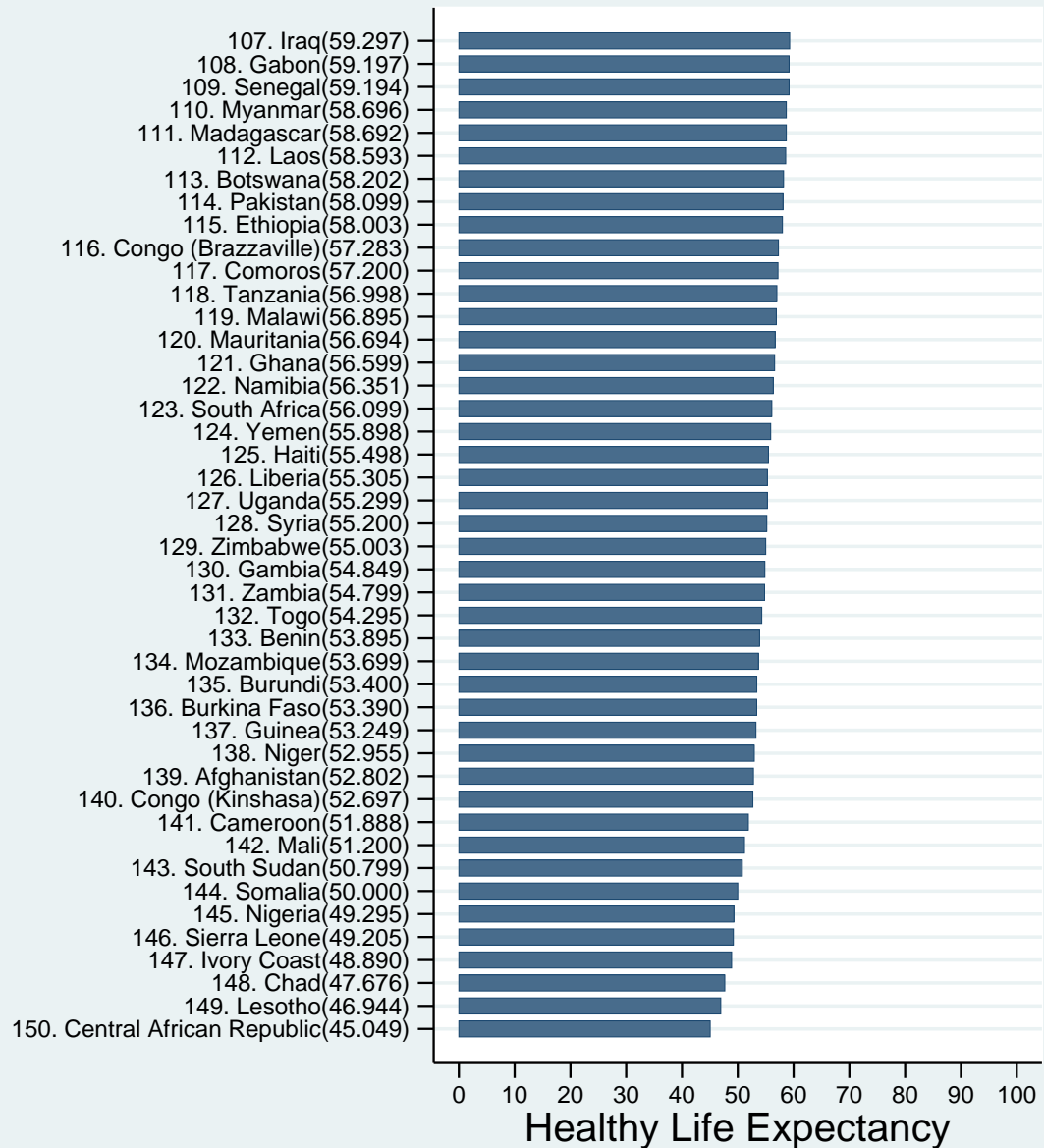




Figure 25: Ranking of Freedom to Make Life Choices: 2016-18 (Part 1)

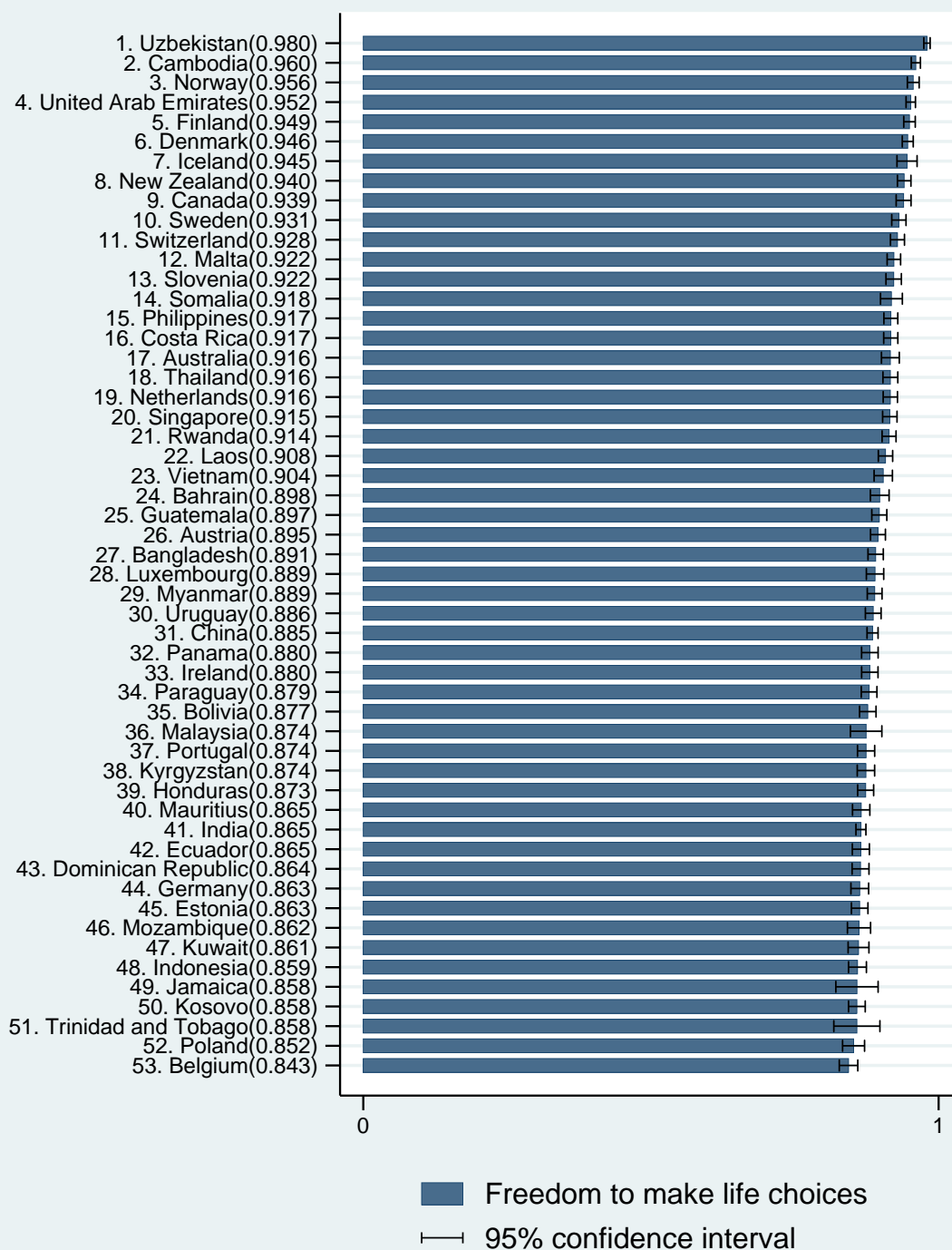


Figure 26: Ranking of Freedom to Make Life Choices: 2016-18 (Part 2)

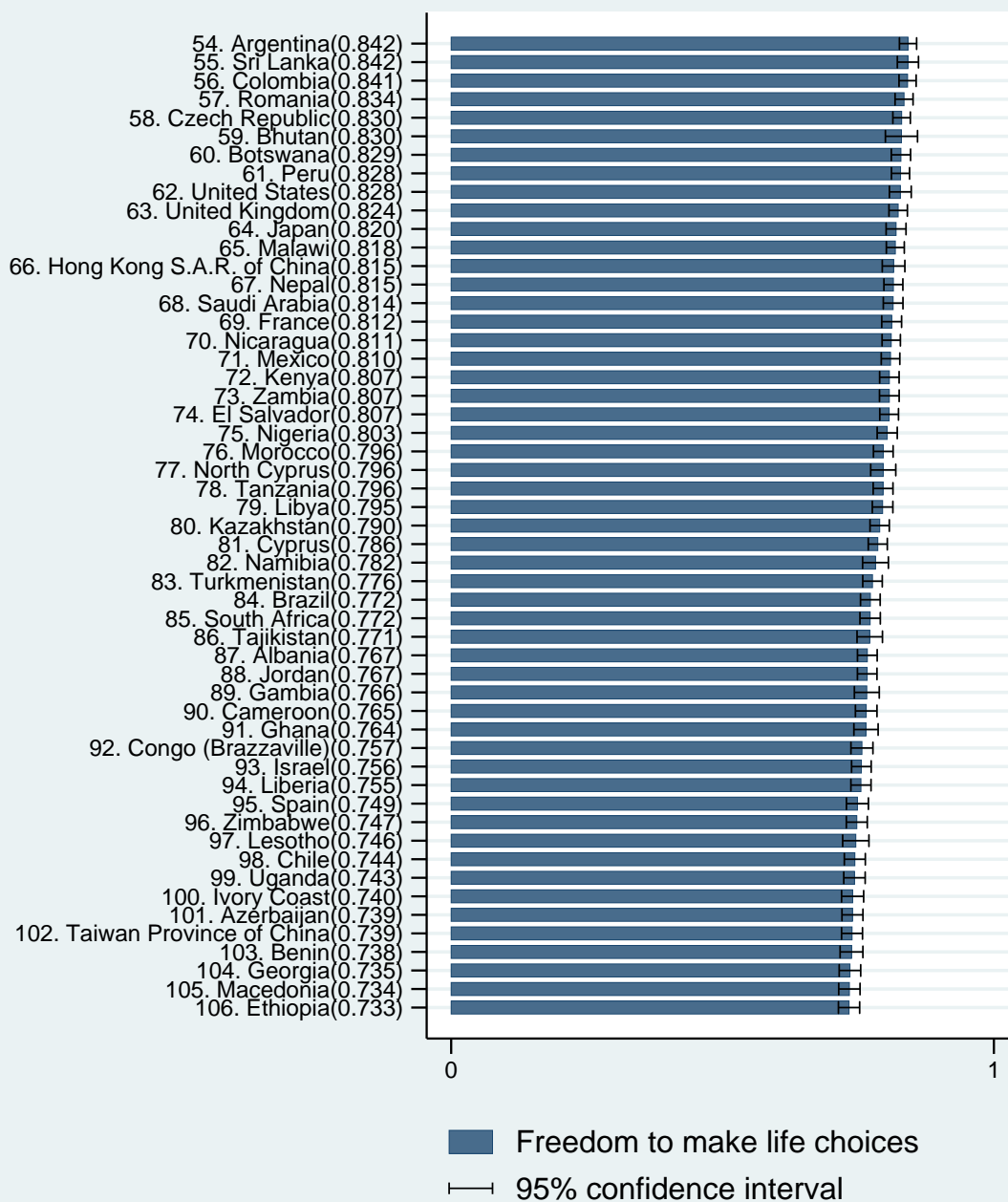


Figure 27: Ranking of Freedom to Make Life Choices: 2016-18 (Part 3)

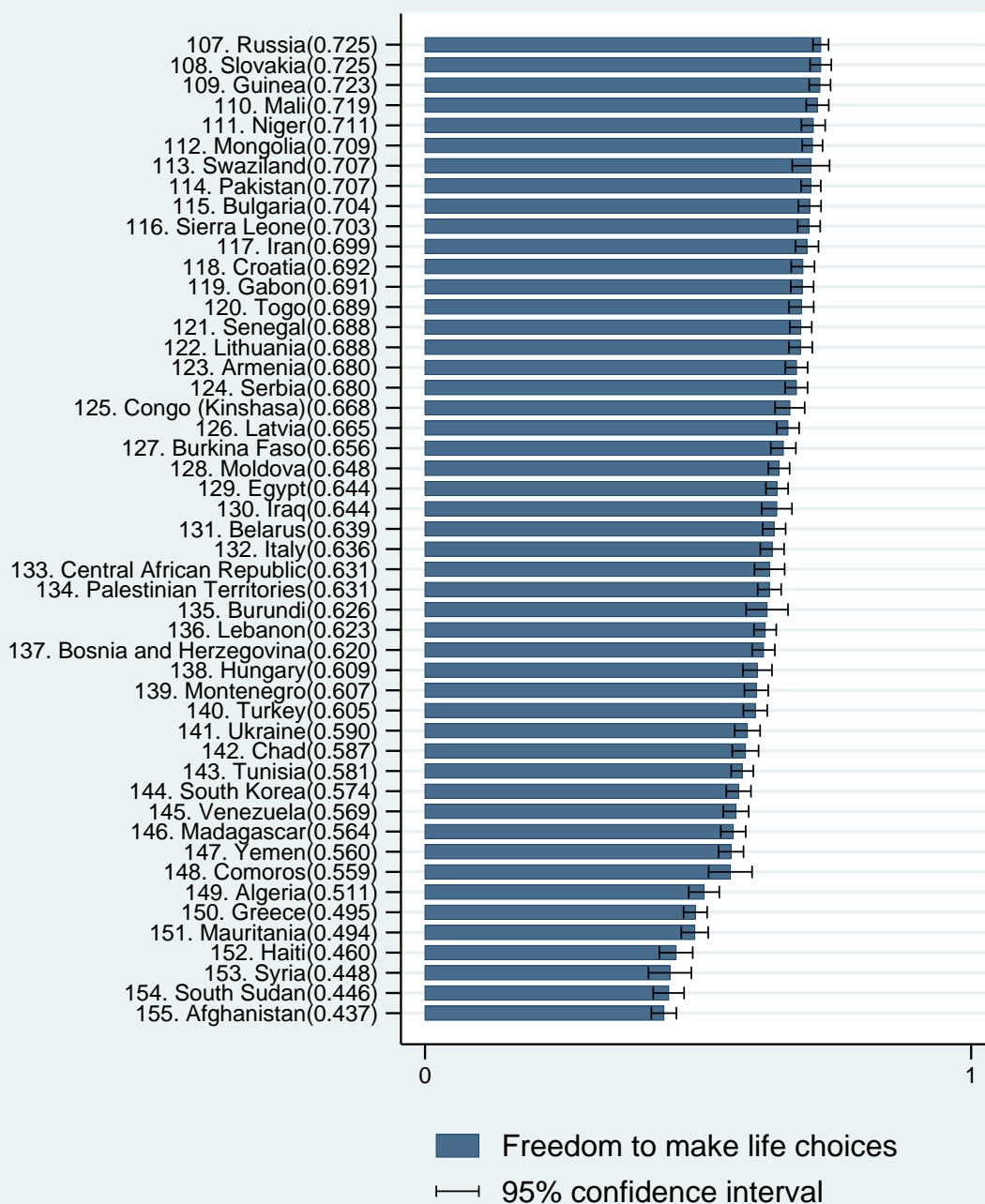


Figure 28: Ranking of Generosity – % Who Donated to Charity in the Past Month – Without Adjusting for Per-Capita Income: 2016-18 (Part 1)

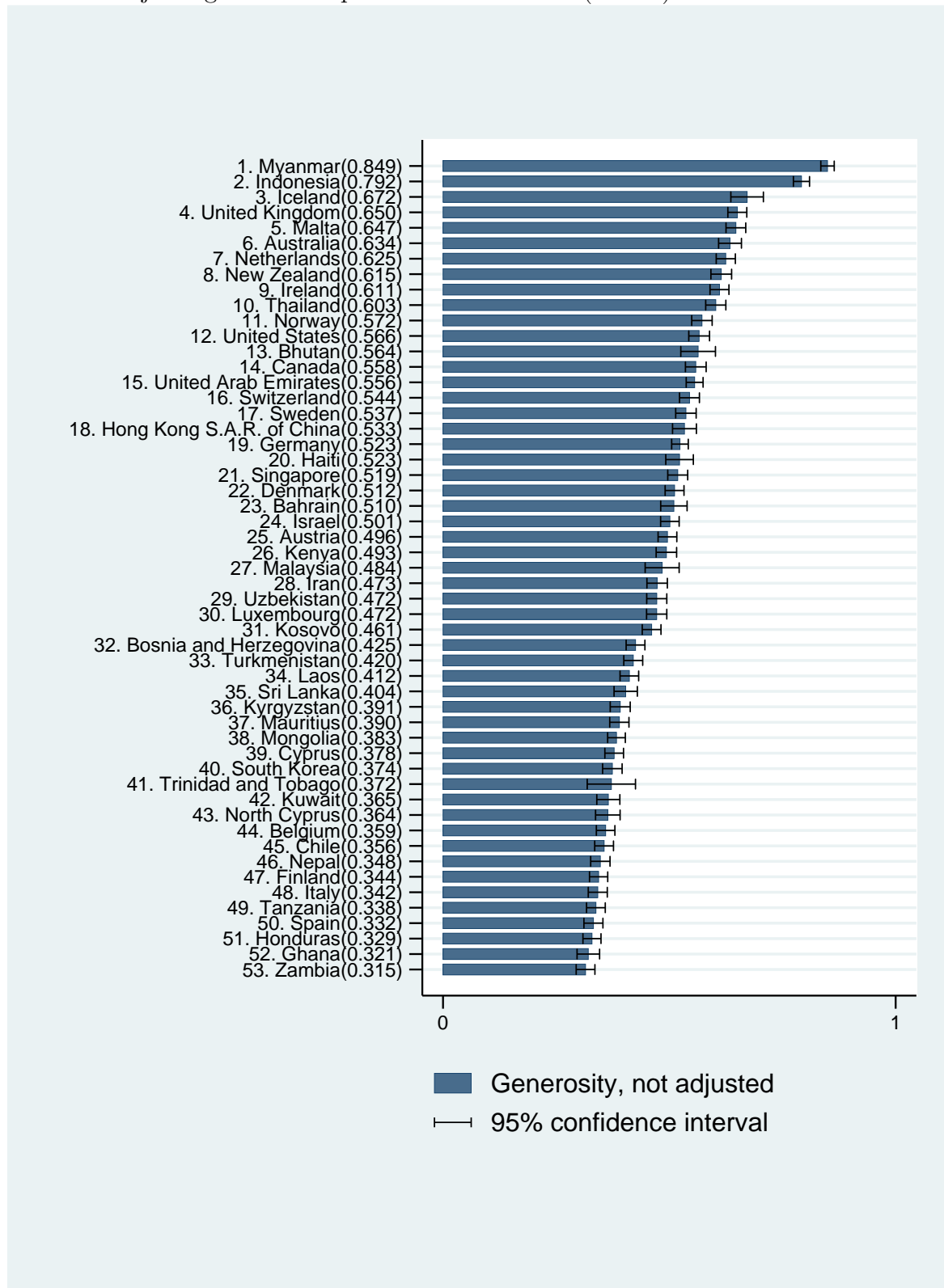


Figure 29: Ranking of Generosity – % Who Donated to Charity in the Past Month – Without Adjusting for Per-Capita Income: 2016-18 (Part 2)

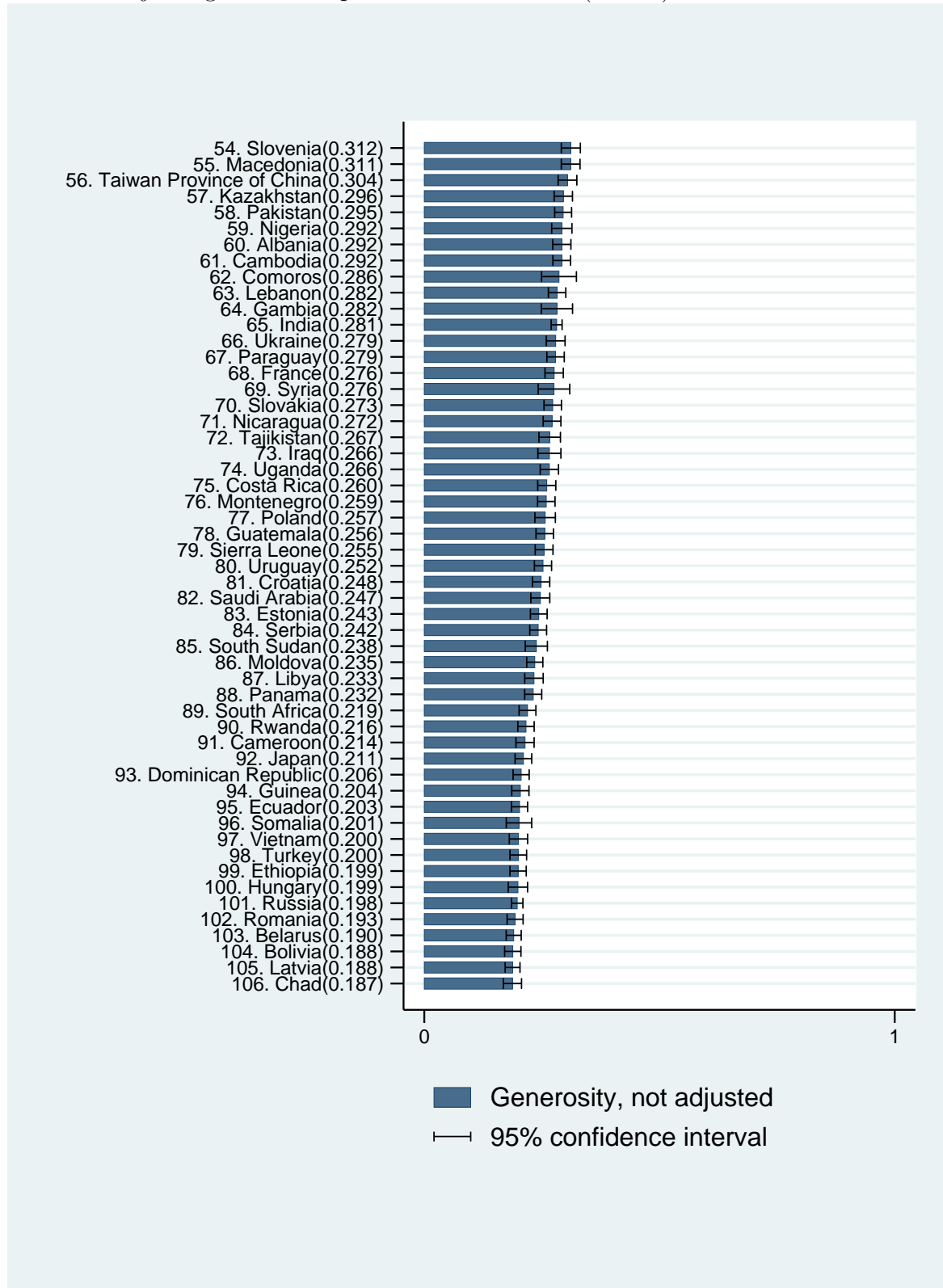


Figure 30: Ranking of Generosity – % Who Donated to Charity in the Past Month – Without Adjusting for Per-Capita Income: 2016-18 (Part 3)

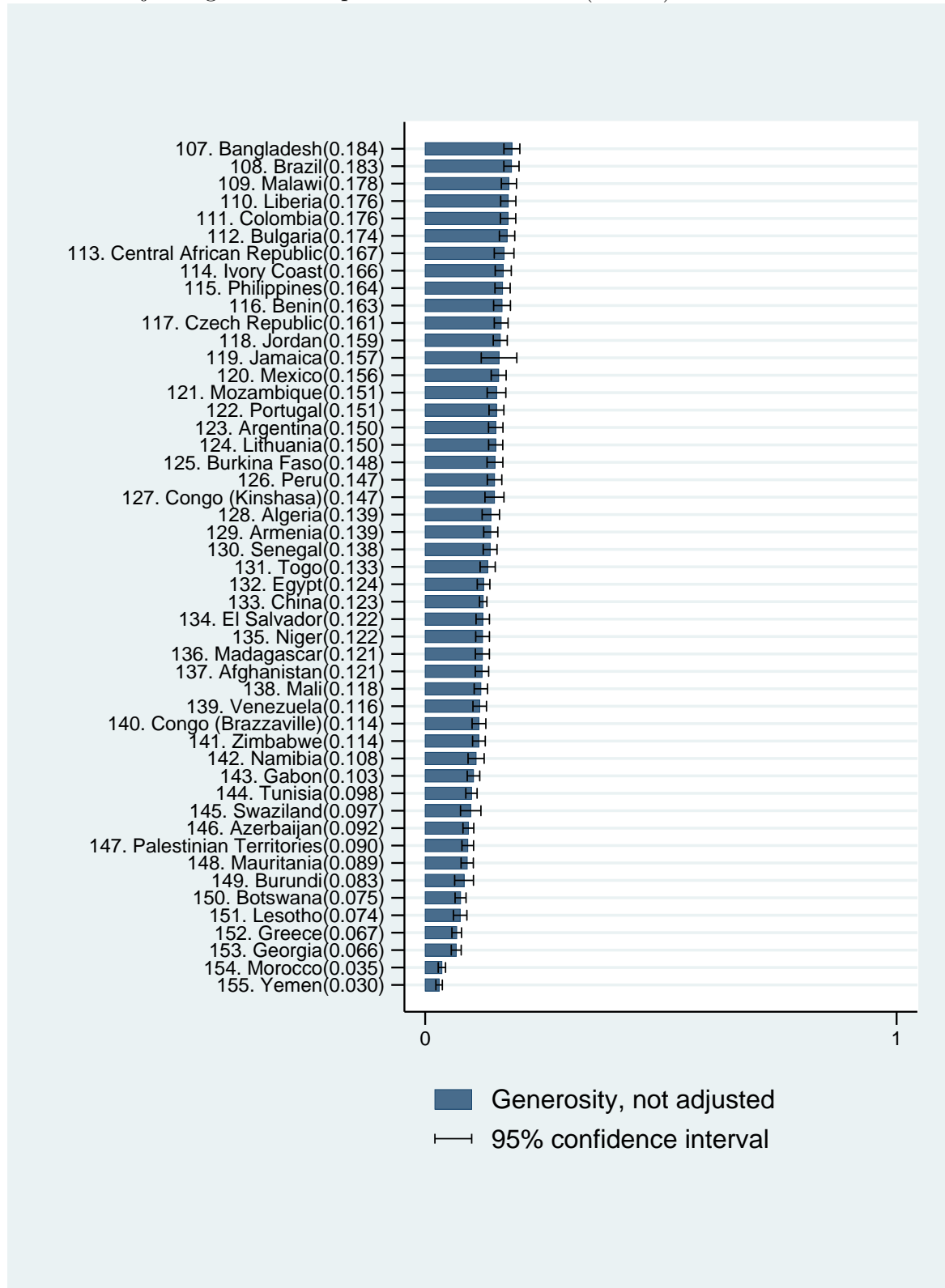


Figure 31: Ranking of Perceptions of Corruption: 2016-18 (Part 1)

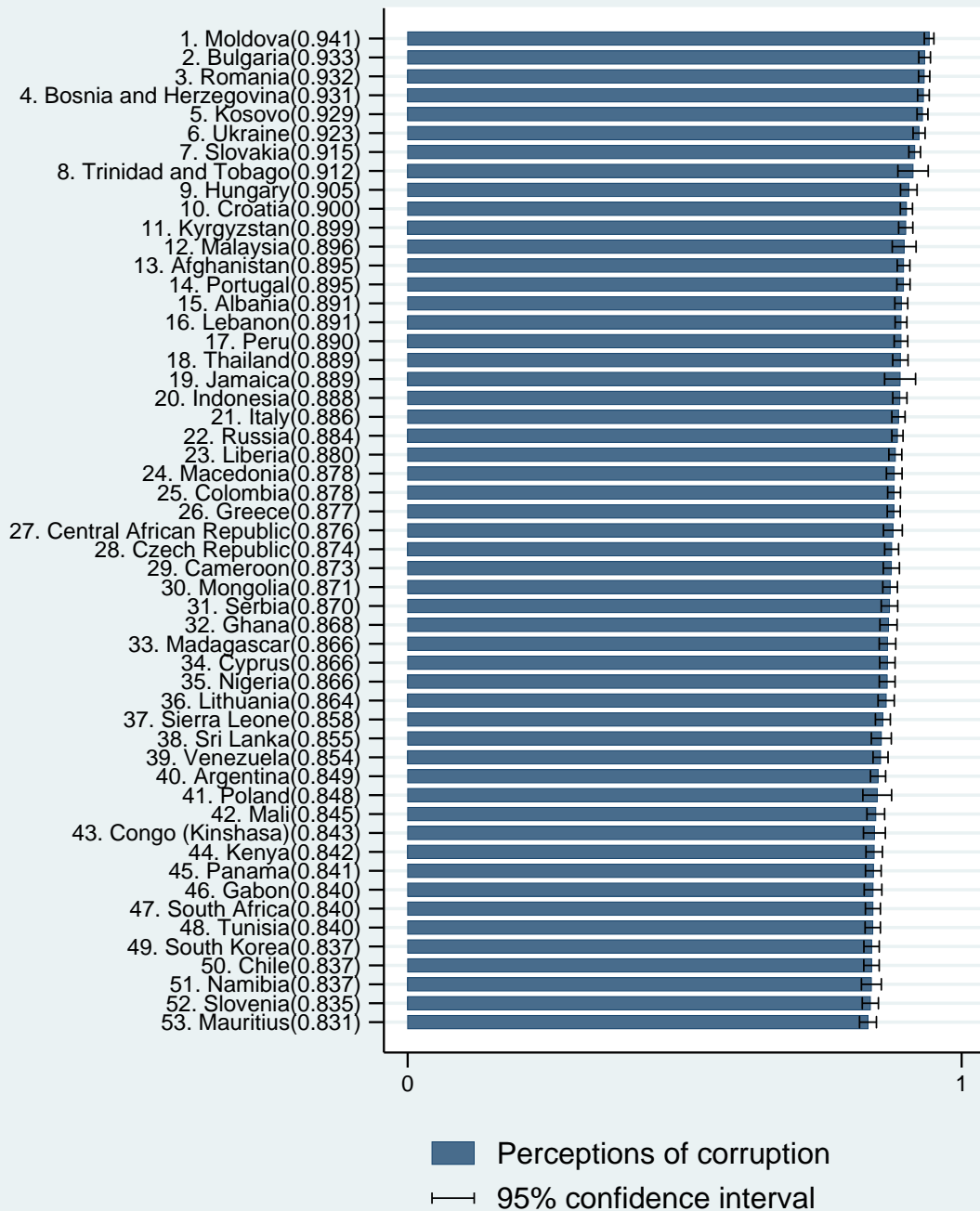


Figure 32: Ranking of Perceptions of Corruption: 2016-18 (Part 2)

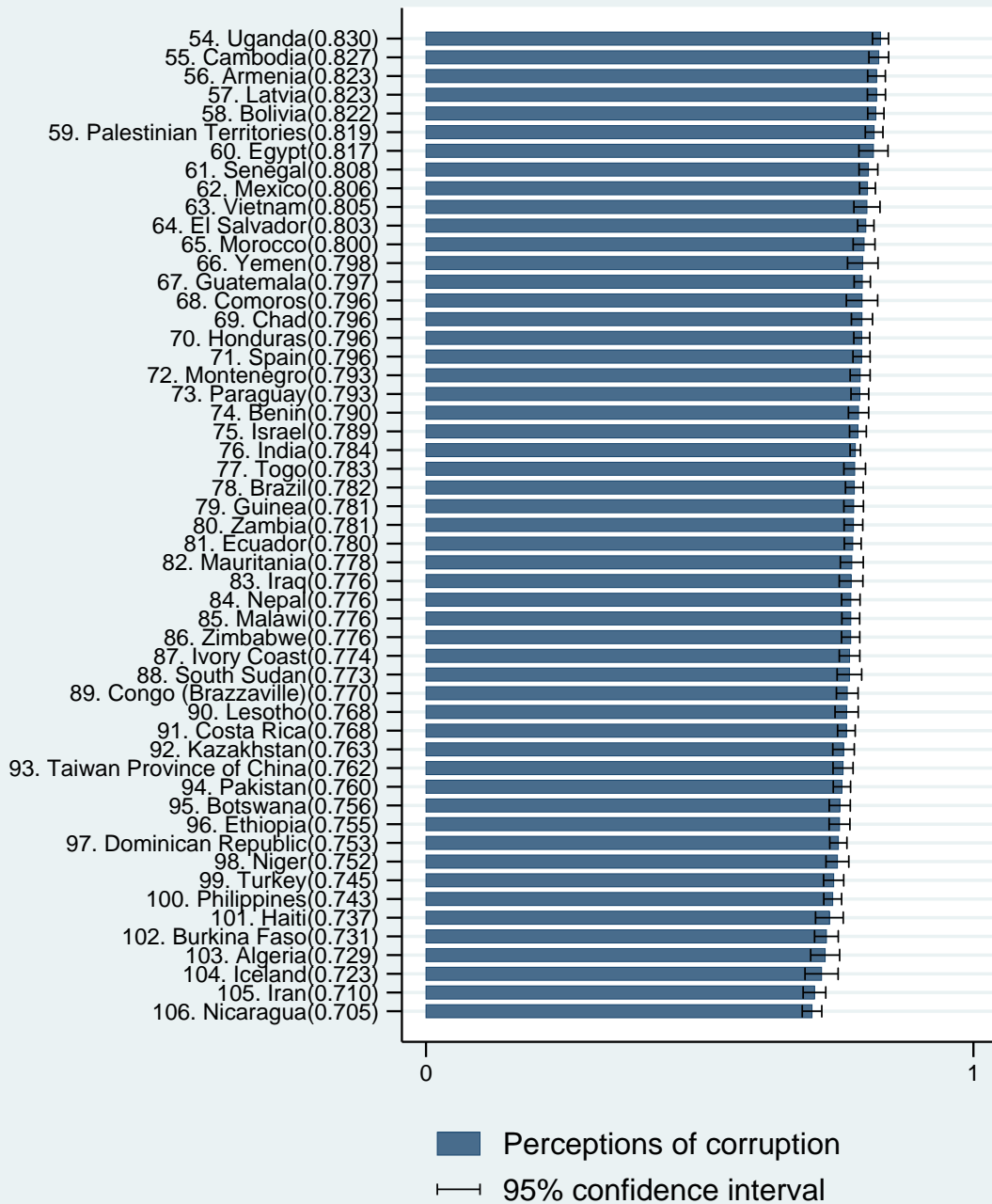




Figure 33: Ranking of Perceptions of Corruption: 2016-18 (Part 3)

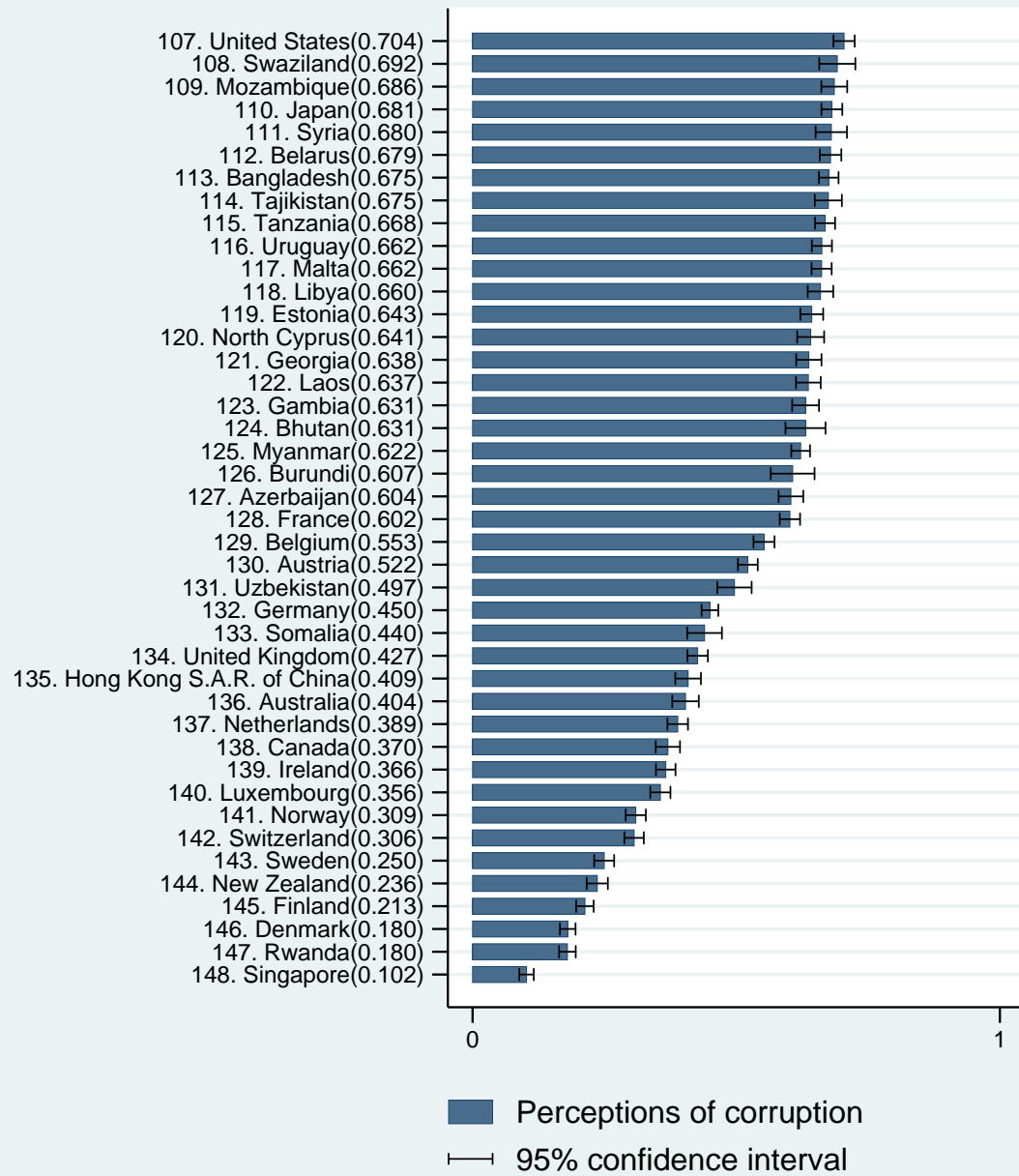


Figure 34: Ranking of Positive Affect: 2016-18 (Part 1)

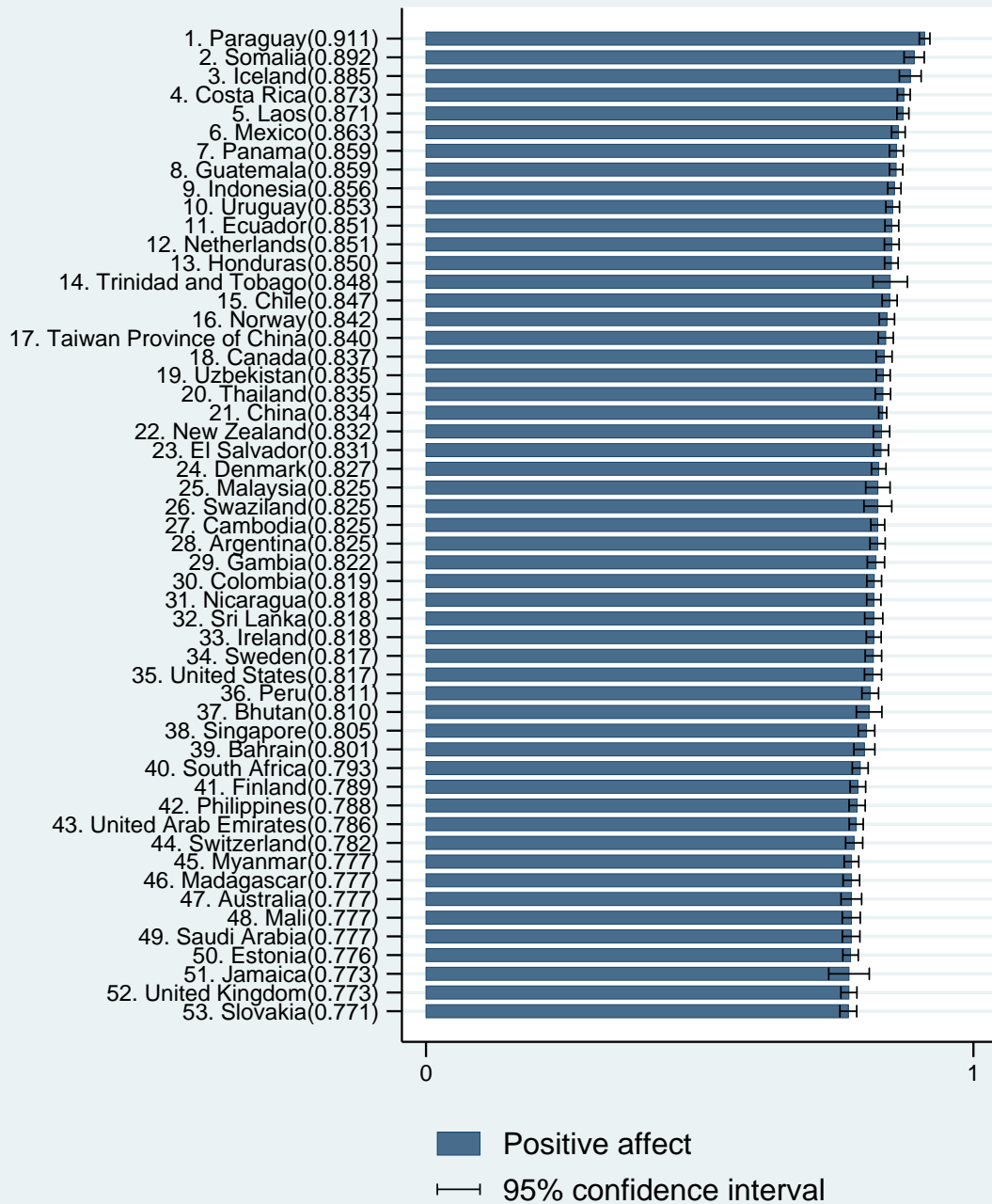


Figure 35: Ranking of Positive Affect: 2016-18 (Part 2)

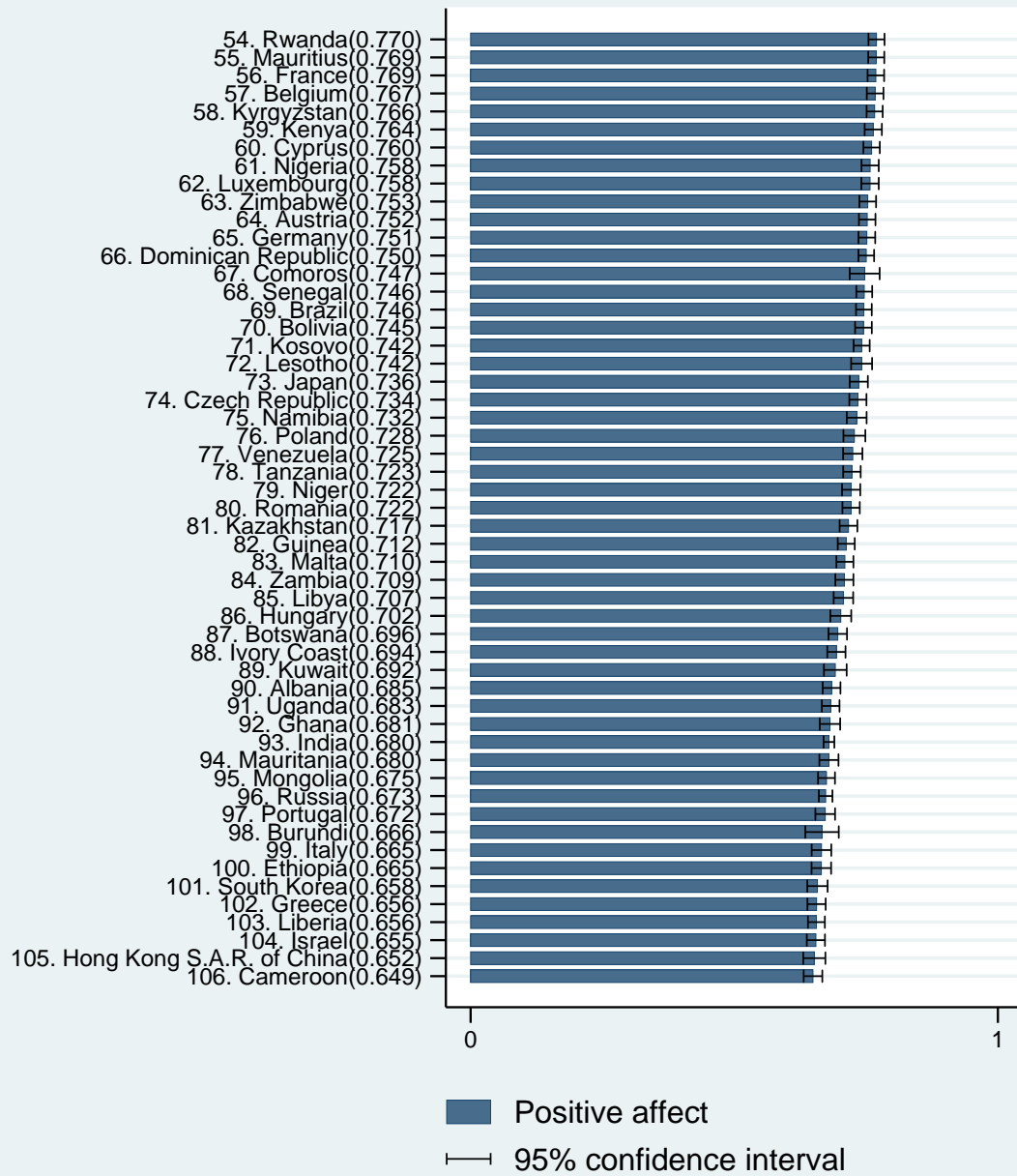


Figure 36: Ranking of Positive Affect: 2016-18 (Part 3)

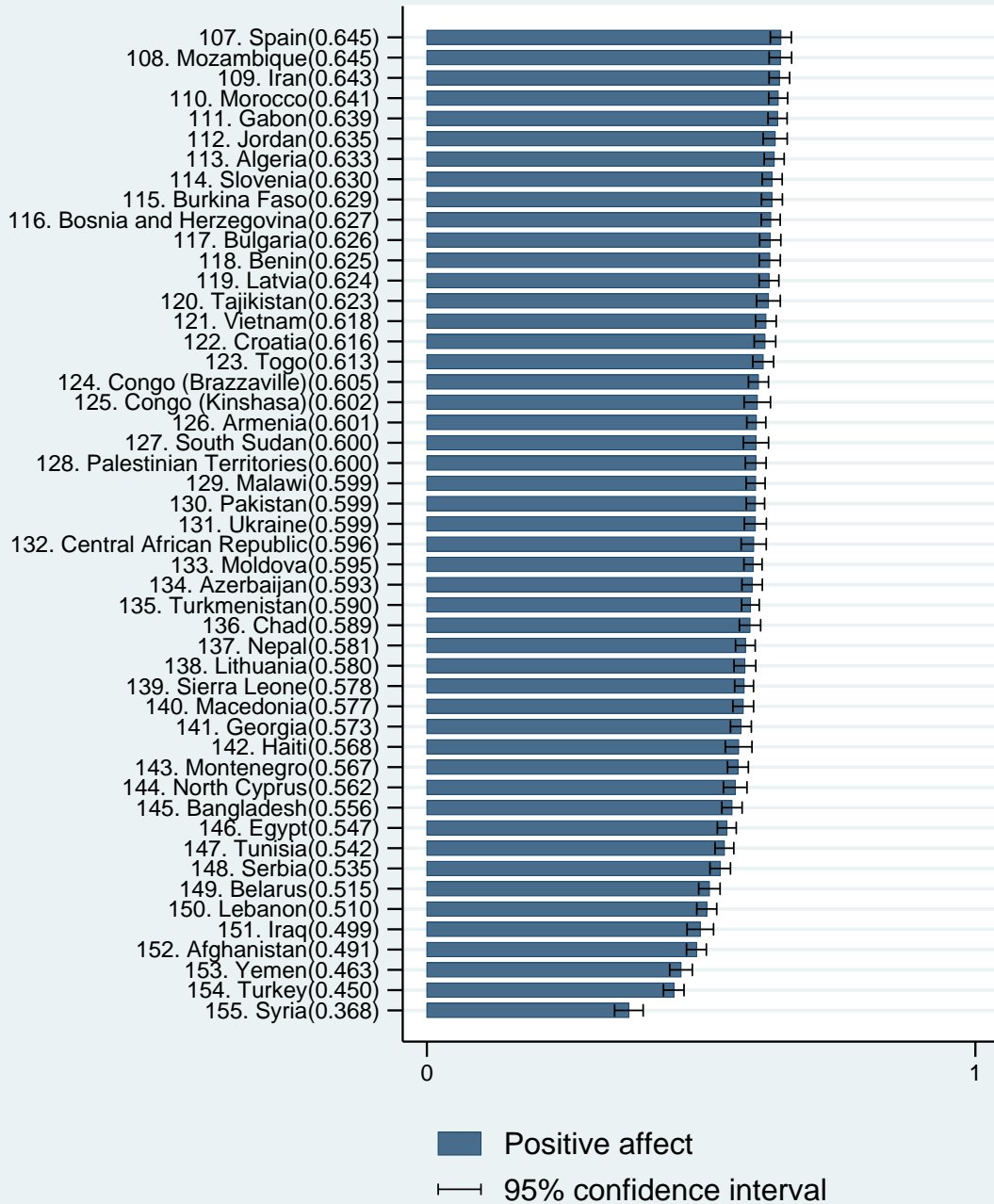


Figure 37: Ranking of Negative Affect: 2016-18 (Part 1)

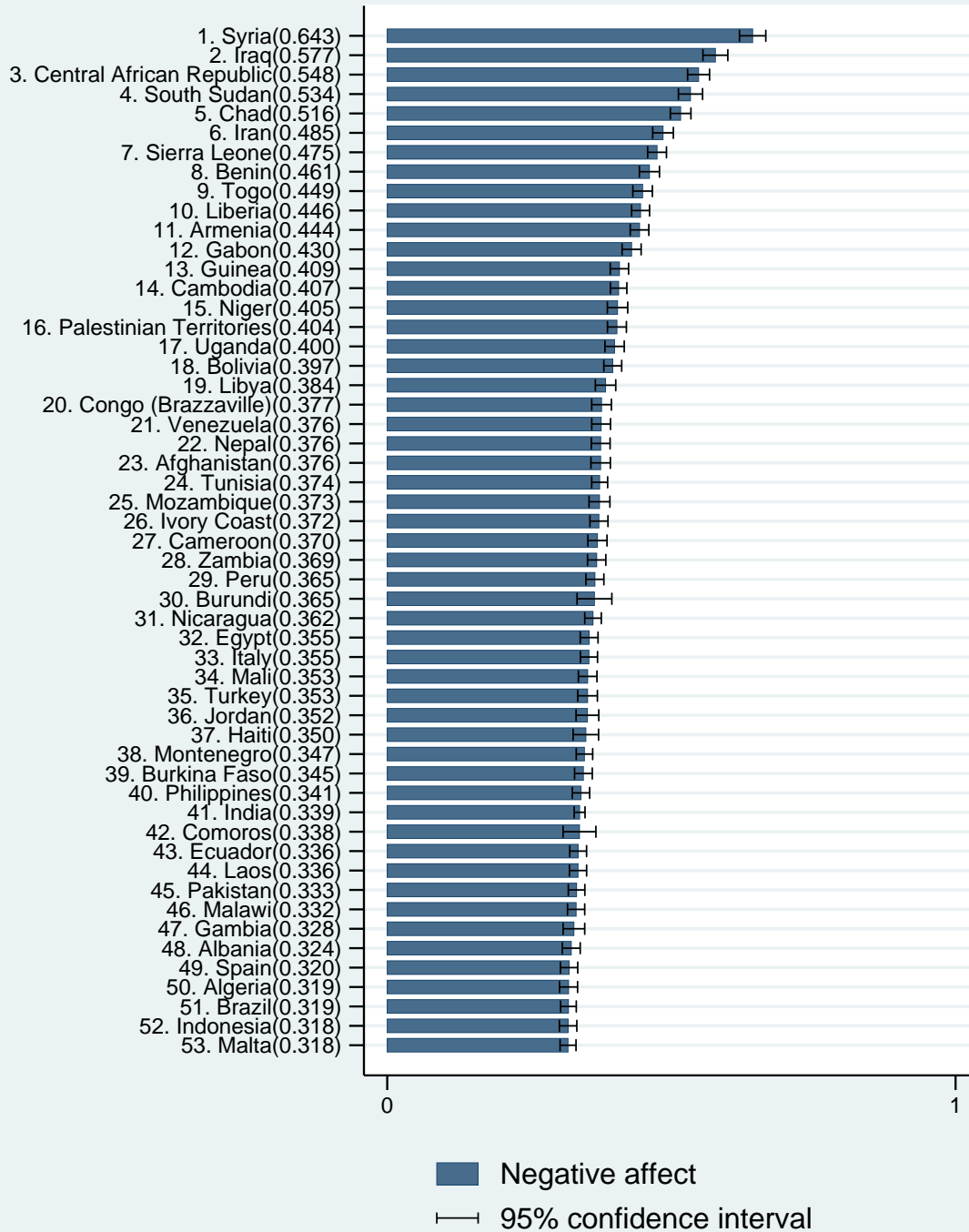


Figure 38: Ranking of Negative Affect: 2016-18 (Part 2)

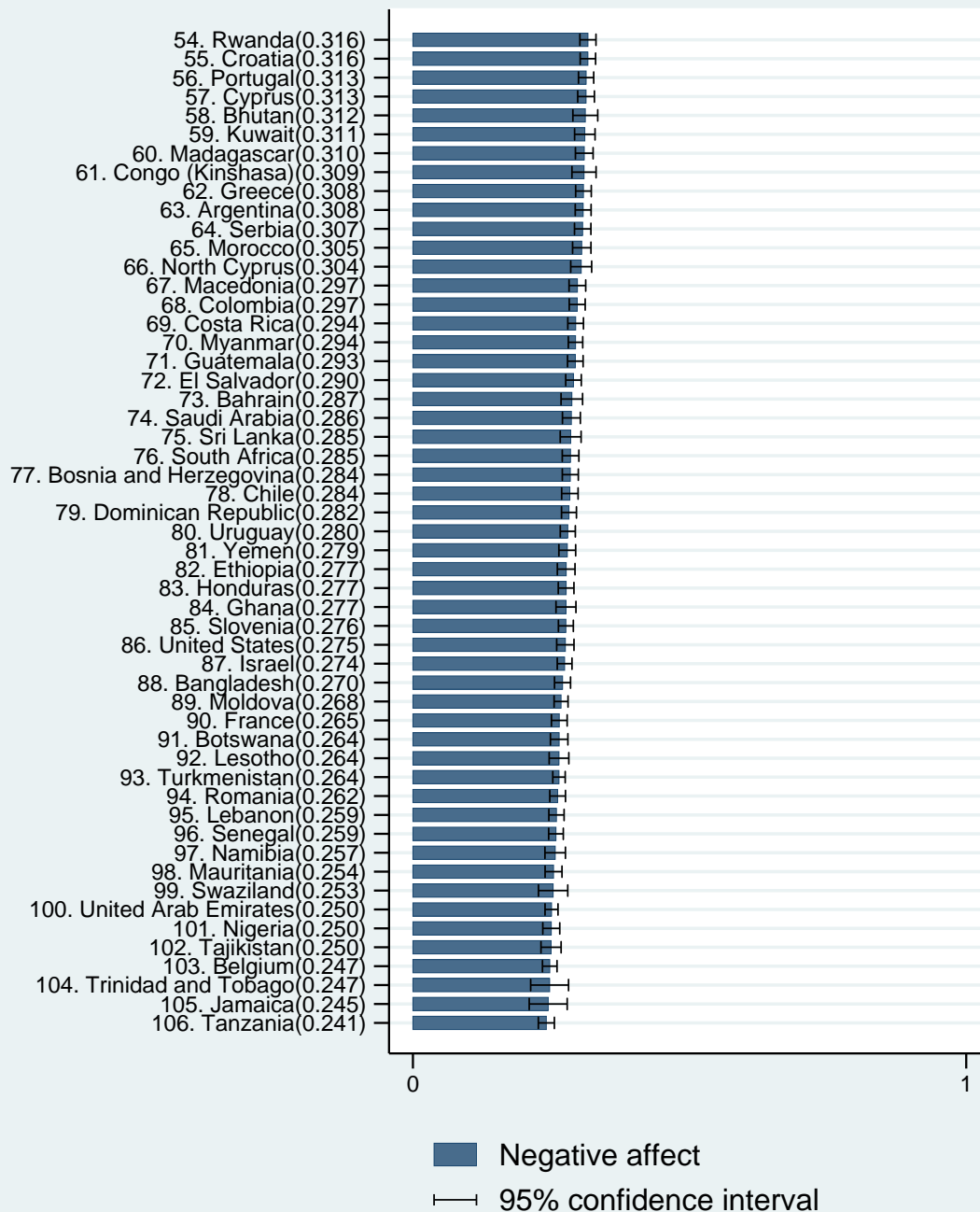


Figure 39: Ranking of Negative Affect: 2016-18 (Part 3)

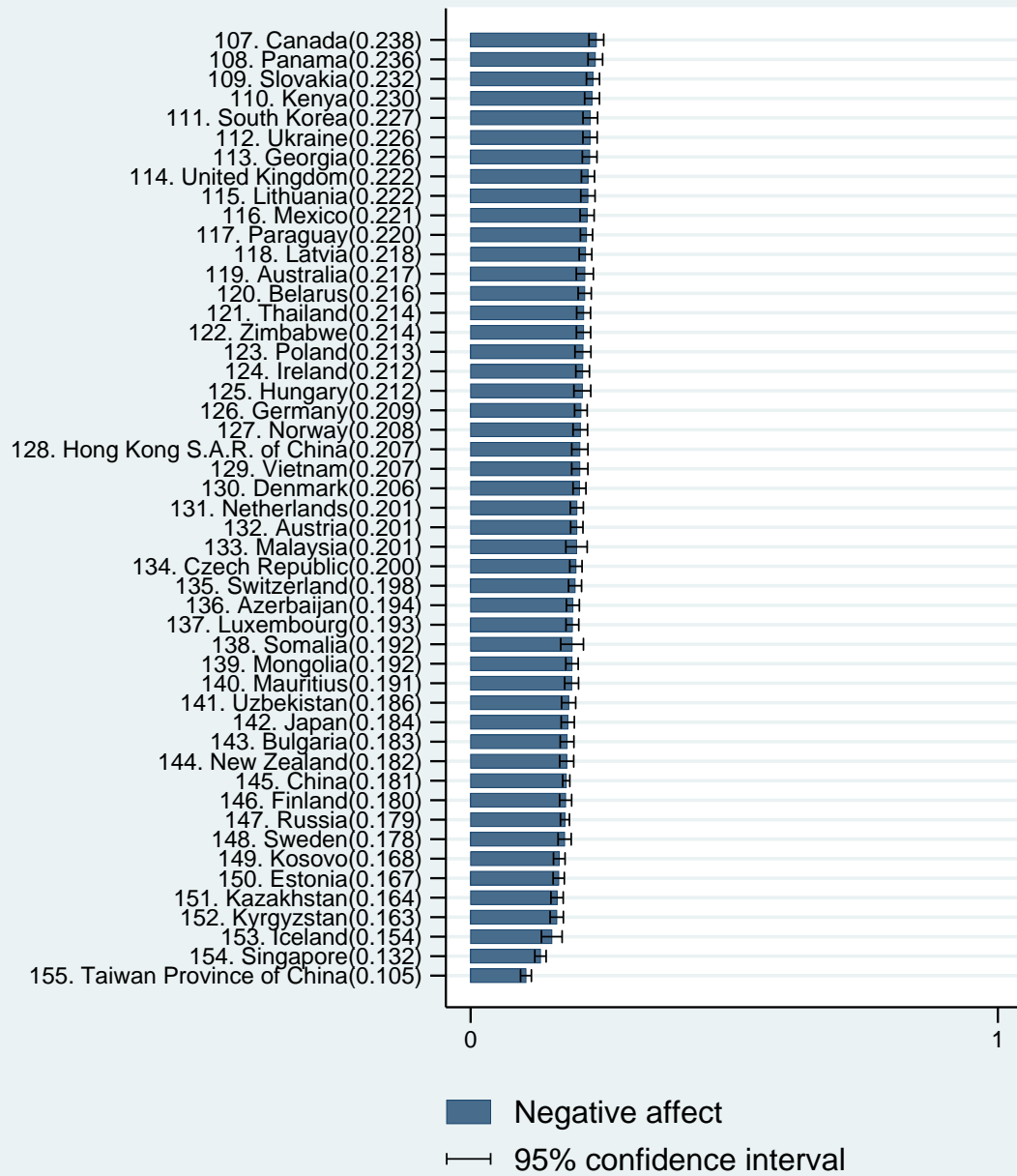


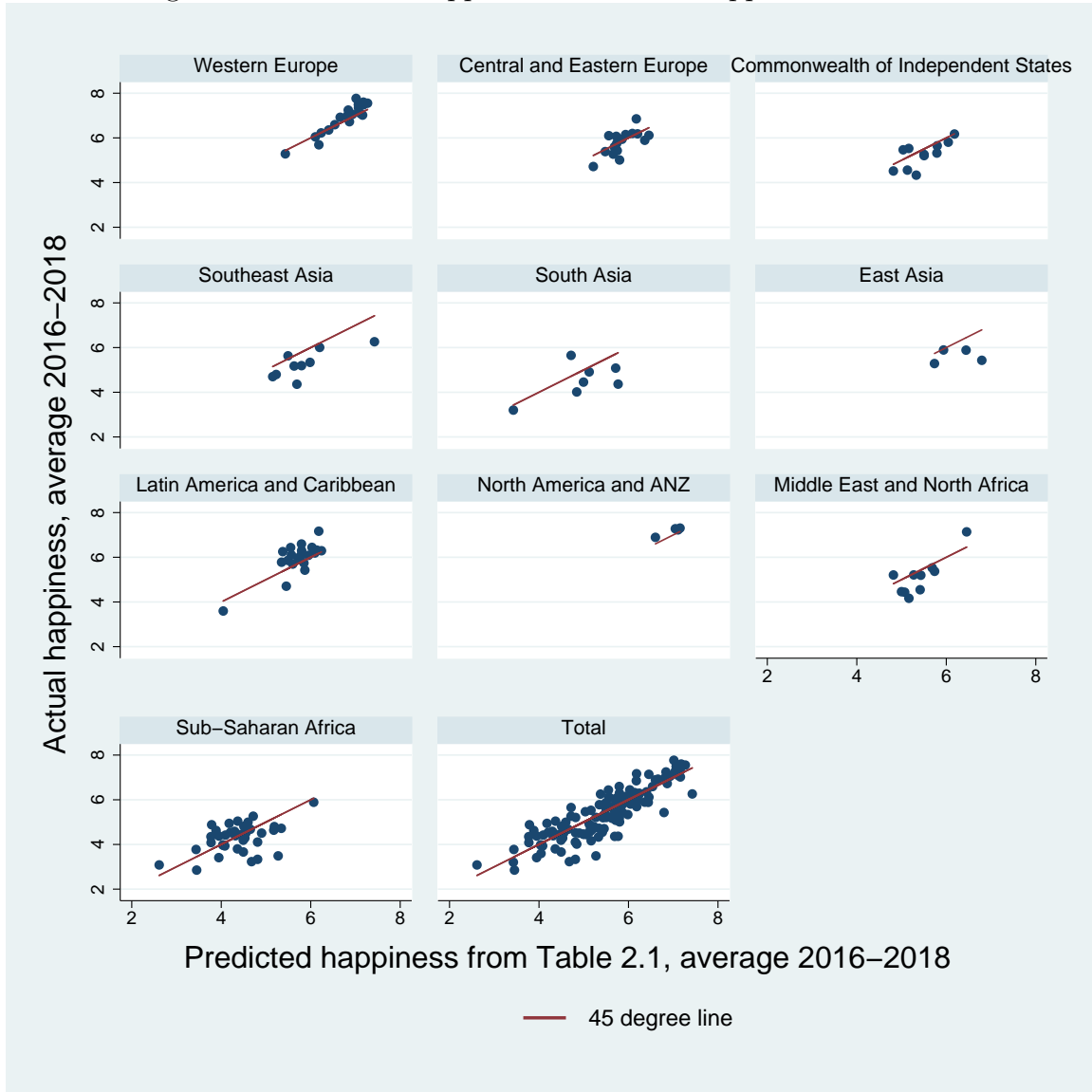
Table 15: Regressions with inequality measures

	c1	c2	c3	c4	c5	c6
	(1)	(2)	(3)	(4)	(5)	(6)
Log GDP per capita	0.41 (0.062)***	0.36 (0.064)***	0.326 (0.071)***	0.387 (0.07)***	0.33 (0.07)***	0.392 (0.07)***
Social support	1.902 (0.365)***	1.713 (0.327)***	1.865 (0.335)***	1.787 (0.345)***	1.777 (0.331)***	1.540 (0.335)***
Healthy life expectancy at birth	0.022 (0.009)**	0.015 (0.011)	0.014 (0.012)	0.012 (0.012)	0.015 (0.012)	0.015 (0.012)
Freedom to make life choices	0.897 (0.267)***	0.995 (0.262)***	1.045 (0.287)***	1.035 (0.28)***	1.085 (0.292)***	1.136 (0.276)***
Generosity	0.784 (0.266)***	0.618 (0.288)**	0.702 (0.317)**	0.617 (0.322)*	0.699 (0.314)**	0.653 (0.313)**
Perceptions of corruption	-.573 (0.289)**	-.264 (0.277)	-.395 (0.278)	-.339 (0.3)	-.328 (0.286)	-.201 (0.316)
Standard deviation of ladder by country-year	-.206 (0.087)**	-.199 (0.099)**			-.094 (0.105)	-.204 (0.11)*
gini of household income reported in Gallup, by wp5-year			-1.090 (0.369)***		-.939 (0.382)**	
GINI index (World Bank estimate), average 2000-16				-1.645 (0.854)*		-1.452 (0.879)*
Central and Eastern Europe		-.479 (0.161)***	-.462 (0.163)***	-.472 (0.176)***	-.445 (0.165)***	-.435 (0.176)**
Commonwealth of Independent States		-.479 (0.197)**	-.501 (0.197)**	-.452 (0.223)**	-.487 (0.197)**	-.425 (0.22)*
Southeast Asia		-.688 (0.154)***	-.655 (0.173)***	-.454 (0.207)**	-.664 (0.171)***	-.511 (0.203)**
South Asia		-.520 (0.373)	-.557 (0.376)	-.394 (0.402)	-.555 (0.376)	-.395 (0.406)
East Asia		-.767 (0.246)***	-.618 (0.23)***	-.581 (0.205)***	-.616 (0.231)***	-.566 (0.208)***
Latin America and Caribbean	0.611 (0.099)***	0.182 (0.177)	0.236 (0.179)	0.413 (0.243)*	0.274 (0.184)	0.485 (0.237)**
North America and ANZ		0.201 (0.085)**	0.353 (0.143)**	0.269 (0.099)***	0.338 (0.135)**	0.271 (0.097)***
Middle East and North Africa		-.445 (0.245)*	-.483 (0.242)**	-.392 (0.294)	-.459 (0.245)*	-.343 (0.285)
Sub-Saharan Africa		-.597 (0.29)**	-.556 (0.3)*	-.395 (0.321)	-.543 (0.3)*	-.347 (0.318)
Obs.	1516	1516	1203	1400	1203	1400
e(N-clust)	157	157	154	137	154	137
e(r2-a)	0.766	0.788	0.791	0.784	0.792	0.788

Notes: 1). Standard errors in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at 10 percent, 5 percent and 1 percent levels. All standard errors are cluster-adjusted at the country level. The row “e(N-clust)” indicates the number of countries. 2). See section “Data Sources and Variable Definitions” for more information.



Figure 40: Predicted happiness and actual happiness in 2016-18



Note: These average actual (predicted) happiness scores by country/territory for the 2016-2018 period are weighted averages of the yearly averages by county/territory used in (predicted by) column (1)'s regression in Table 10. The yearly weights are the sums of Gallup-assigned individual weights by country/territory in that year.

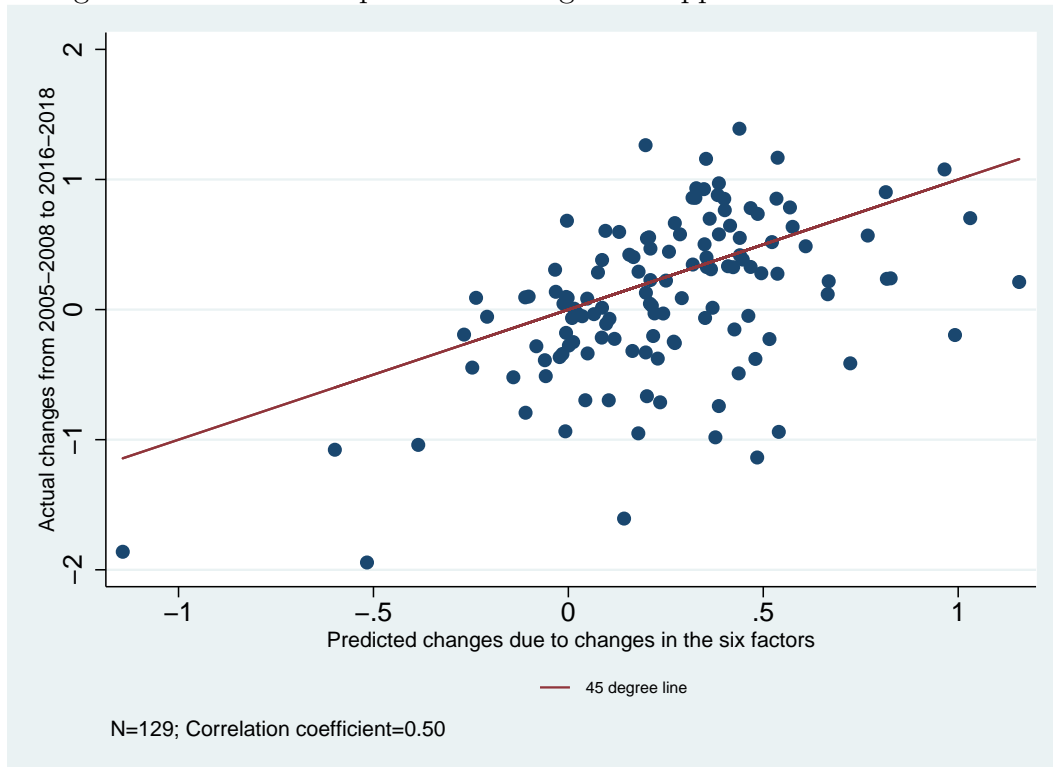
Table 16: Decomposing the happiness difference between a hypothetical average country and Dystopia

	Average country	Dystopia	Explained excess happiness over Dystopia due to	Share of explained excess happiness over Dystopia due to
Happiness	5.41	1.88		
Logged GDP per capita	9.24	6.4	.91	.26
Social support	.8	.31	1.21	.34
Healthy life expectancy	63.88	41.85	.73	.21
Freedom to make life choices	.77	.44	.39	.11
Generosity	-.01	-.3	.18	.05
Perceptions of corruption	.74	.94	.11	.03
Sum of explained excess over Dystopia			3.53	1

Table 17: Decomposing the happiness difference between the group of top 10 countries/territories and the group of bottom 10 countries/territories in the ranking of happiness scores

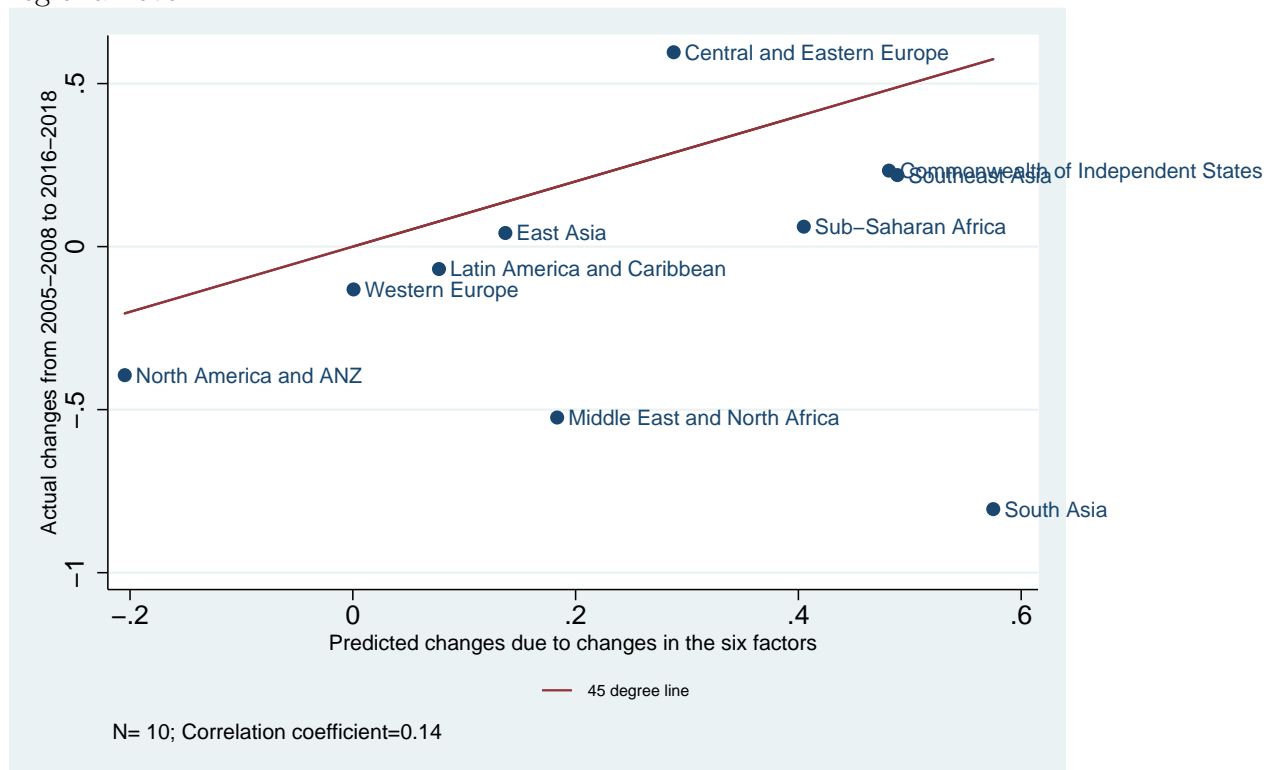
	Top 10	Bottom 10	Difference in happiness due to	Share of explained difference due to
Happiness	7.46	3.3		
Logged GDP per capita	10.76	7.65	.99	.32
Social support	.94	.58	.88	.29
Healthy life expectancy	72.76	54.78	.59	.19
Freedom to make life choices	.93	.63	.35	.11
Generosity	.14	.05	.06	.02
Perceptions of corruption	.35	.71	.2	.06
Total explained difference in happiness			3.06	1
Total difference in happiness			4.15	

Figure 41: Actual and predicted changes in happiness from 2005-08 to 2016-18



Note: Defining predicted changes in happiness due to changes in the six factors: Step 1. Take periodical averages (2005-08 and 2016-18, respectively) of the six factors in the survey data. Step 2. Take difference between the two periods for each of the factors. Step 3. Multiply the differences with corresponding coefficients on the factors in Table 2.1. Step 4. Take the summation of the products from the previous step. The resulted sum is predicted change in ladder due to changes in the six factors.

Figure 42: Actual and predicted changes in happiness from 2005-08 to 2016-18 at the regional level



Note: This plot at the regional level shows weighted averages of the actual and predicted changes shown in figure 41. The weights for deriving the regional averages are average population from 2005 to 2016.

Table 18: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for the full world sample

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	5.504	5.418	
Logged GDP per capita	9.32	9.141	.057
Social support	.813	.813	0
Healthy life expectancy	64.706	61.613	.102
Freedom to make life choices	.779	.702	.089
Generosity	-.008	.014	-.014
Perceptions of corruption	.74	.762	.012
Sum of explained changes in happiness			.246
Total changes in happiness			.086

Note:

Table 19: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for the top 10 countries/territories in terms of happiness changes

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	5.384	4.317	
Logged GDP per capita	8.712	8.464	.079
Social support	.777	.735	.1
Healthy life expectancy	61.118	57.513	.119
Freedom to make life choices	.764	.648	.136
Generosity	-.026	-.036	.006
Perceptions of corruption	.796	.861	.035
Sum of explained changes in happiness			.475
Total changes in happiness			1.067

Note: The following countries/territories are in this group: Benin, Bulgaria, Cameroon, Ecuador, Latvia, Nicaragua, Sierra Leone, Slovakia, Togo, Uzbekistan,

Table 20: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for the bottom 10 countries/territories in terms of happiness changes

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	3.818	5.066	
Logged GDP per capita	8.448	8.35	.031
Social support	.639	.722	-.201
Healthy life expectancy	59.244	55.157	.135
Freedom to make life choices	.701	.744	-.05
Generosity	-.038	-.021	-.011
Perceptions of corruption	.727	.733	.003
Sum of explained changes in happiness			-.093
Total changes in happiness			-1.247

Note: The following countries/territories are in this group: Botswana, Central African Republic, Egypt, Greece, India, Malawi, Rwanda, Syria, Tanzania, Venezuela,

Table 21: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for Western Europe

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	6.897	7.023	
Logged GDP per capita	10.648	10.617	.01
Social support	.918	.934	-.041
Healthy life expectancy	72.672	70.981	.056
Freedom to make life choices	.846	.86	-.016
Generosity	.041	.115	-.047
Perceptions of corruption	.534	.585	.028
Sum of explained changes in happiness			-.011
Total changes in happiness			-.126

Note: The following countries/territories are in this group: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom,

Table 22: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for Central and Eastern Europe

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	5.777	5.206	
Logged GDP per capita	9.923	9.704	.07
Social support	.869	.871	-.005
Healthy life expectancy	67.869	65.492	.078
Freedom to make life choices	.744	.606	.161
Generosity	-.095	-.093	-.001
Perceptions of corruption	.868	.893	.013
Sum of explained changes in happiness			.316
Total changes in happiness			.571

Note: The following countries/territories are in this group: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Kosovo, Latvia, Lithuania, Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia,

Table 23: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for Commonwealth of Independent States

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	5.257	4.961	
Logged GDP per capita	9.112	8.832	.089
Social support	.834	.804	.073
Healthy life expectancy	64.642	61.469	.104
Freedom to make life choices	.743	.657	.1
Generosity	-.051	-.176	.079
Perceptions of corruption	.757	.806	.027
Sum of explained changes in happiness			.472
Total changes in happiness			.296

Note: The following countries/territories are in this group: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Ukraine, Uzbekistan,

Table 24: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for Southeast Asia

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	5.388	5.351	
Logged GDP per capita	9.408	9.006	.128
Social support	.824	.808	.039
Healthy life expectancy	65.211	62.511	.089
Freedom to make life choices	.907	.818	.103
Generosity	.127	.196	-.044
Perceptions of corruption	.724	.733	.005
Sum of explained changes in happiness			.319
Total changes in happiness			.037

Note: The following countries/territories are in this group: Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, Vietnam,

Table 25: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for South Asia

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	4.434	4.576	
Logged GDP per capita	8.356	7.961	.126
Social support	.69	.628	.151
Healthy life expectancy	60.654	57.497	.104
Freedom to make life choices	.759	.637	.142
Generosity	.037	.106	-.044
Perceptions of corruption	.791	.854	.034
Sum of explained changes in happiness			.513
Total changes in happiness			-.142

Note: The following countries/territories are in this group: Afghanistan, Bangladesh, India, Nepal, Pakistan, Sri Lanka,



Table 26: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for East Asia

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	5.789	5.468	
Logged GDP per capita	10.411	10.172	.076
Social support	.873	.856	.041
Healthy life expectancy	71.166	69.241	.063
Freedom to make life choices	.731	.723	.01
Generosity	.011	.005	.004
Perceptions of corruption	.712	.731	.01
Sum of explained changes in happiness			.205
Total changes in happiness			.32

Note: The following countries/territories are in this group: Hong Kong S.A.R. of China, Japan, Mongolia, South Korea, Taiwan Province of China,

Table 27: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for Latin America and Caribbean

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	5.954	5.772	
Logged GDP per capita	9.304	9.134	.054
Social support	.859	.863	-.011
Healthy life expectancy	66.507	64.044	.081
Freedom to make life choices	.816	.73	.101
Generosity	-.069	.016	-.054
Perceptions of corruption	.807	.808	.001
Sum of explained changes in happiness			.171
Total changes in happiness			.182

Note: The following countries/territories are in this group: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, Venezuela,

Table 28: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for North America and ANZ

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	7.176	7.376	
Logged GDP per capita	10.699	10.61	.028
Social support	.932	.955	-.056
Healthy life expectancy	72.025	70.709	.043
Freedom to make life choices	.906	.913	-.008
Generosity	.186	.269	-.053
Perceptions of corruption	.429	.444	.008
Sum of explained changes in happiness			-.036
Total changes in happiness			-.2

Note: The following countries/territories are in this group: Australia, Canada, New Zealand, United States,

Table 29: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for Middle East and North Africa

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	5.262	5.609	
Logged GDP per capita	9.809	9.771	.012
Social support	.778	.801	-.055
Healthy life expectancy	64.654	63.625	.034
Freedom to make life choices	.704	.626	.09
Generosity	-.03	-.048	.011
Perceptions of corruption	.749	.704	-.024
Sum of explained changes in happiness			.068
Total changes in happiness			-.347

Note: The following countries/territories are in this group: Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestinian Territories, Saudi Arabia, Syria, Turkey, United Arab Emirates,

Table 30: Decomposing changes in happiness from 2005-2008 to 2016-2018, equal weight for each country/territory, for Sub-Saharan Africa

	Period 2016-2018	Period 2005-2008	Explained changes in happiness due to
Happiness	4.233	4.216	
Logged GDP per capita	7.717	7.549	.053
Social support	.676	.679	-.009
Healthy life expectancy	54.521	48.088	.212
Freedom to make life choices	.732	.634	.114
Generosity	.006	.008	-.001
Perceptions of corruption	.776	.811	.019
Sum of explained changes in happiness			.388
Total changes in happiness			.017

Note: The following countries/territories are in this group: Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Ghana, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Tanzania, Togo, Uganda, Zambia, Zimbabwe,

Table 31: Decomposing changes in happiness from 2005-2008 to 2016-2018 by region, weighting countries/territories within a region with their population size

	Changes in average happi- ness	Total ex- plained changes due to the six factors	Changes due to: GDP per capita	Changes due to: Social support	Changes due to: Healthy life ex- pectancy	Changes due to: Free- dom to make life choices	Changes due to: Gen- erosity	Change due to: Percep- tions of corrup- tion
Western Europe	-.131	.001	.01	-.051	.055	-.016	-.051	.055
Central and Eastern Europe	.596	.288	.089	-.003	.077	.114	-.015	.026
Commonwealth of Independent States	.233	.481	.051	.065	.134	.099	.103	.029
Southeast Asia	.219	.489	.127	.111	.068	.145	.018	.021
South Asia	-.805	.575	.163	.054	.117	.166	.03	.045
East Asia	.042	.137	.044	.002	.056	.01	-.007	.032
Latin America and Caribbean	-.069	.077	.035	-.01	.074	.049	-.05	-.021
North America and ANZ	-.394	-.205	.023	-.111	.014	-.057	-.047	-.027
Middle East and North Africa	-.524	.183	.053	-.03	.056	.075	.007	.023
Sub-Saharan Africa	.061	.405	.06	-.037	.205	.148	.008	.021

Table 32: Number of countries/territories that experienced statistically significant changes in happiness scores from 2005-2008 to 2016-2018

	Total number of coun- tries/territories in sample	Number of significant positive changes	Number of significant negative changes
Western Europe	18	4	8
Central and Eastern Europe	17	15	1
Commonwealth of Independent States	11	8	2
Southeast Asia	8	4	4
South Asia	6	2	3
East Asia	6	4	1
Latin America and Caribbean	21	11	5
North America and ANZ	4	0	2
Middle East and North Africa	13	3	6
Sub-Saharan Africa	28	13	10

Table 33: Countries/territories by Region

Region indicator	Country name
Western Europe	Austria
Western Europe	Belgium
Western Europe	Cyprus
Western Europe	Denmark
Western Europe	Finland
Western Europe	France
Western Europe	Germany
Western Europe	Greece
Western Europe	Iceland
Western Europe	Ireland
Western Europe	Italy
Western Europe	Luxembourg
Western Europe	Malta
Western Europe	Netherlands
Western Europe	North Cyprus
Western Europe	Norway
Western Europe	Portugal
Western Europe	Spain
Western Europe	Sweden
Western Europe	Switzerland
Western Europe	United Kingdom
Central and Eastern Europe	Albania
Central and Eastern Europe	Bosnia and Herzegovina
Central and Eastern Europe	Bulgaria
Central and Eastern Europe	Croatia
Central and Eastern Europe	Czech Republic
Central and Eastern Europe	Estonia
Central and Eastern Europe	Hungary
Central and Eastern Europe	Kosovo
Central and Eastern Europe	Latvia
Central and Eastern Europe	Lithuania
Central and Eastern Europe	Macedonia
Central and Eastern Europe	Montenegro
Central and Eastern Europe	Poland
Central and Eastern Europe	Romania
Central and Eastern Europe	Serbia
Central and Eastern Europe	Slovakia
Central and Eastern Europe	Slovenia
Commonwealth of Independent States	Armenia
Commonwealth of Independent States	Azerbaijan
Commonwealth of Independent States	Belarus
Commonwealth of Independent States	Georgia

Table 34: Countries/territories by Region

Region indicator	Country name
Commonwealth of Independent States	Kazakhstan
Commonwealth of Independent States	Kyrgyzstan
Commonwealth of Independent States	Moldova
Commonwealth of Independent States	Russia
Commonwealth of Independent States	Tajikistan
Commonwealth of Independent States	Turkmenistan
Commonwealth of Independent States	Ukraine
Commonwealth of Independent States	Uzbekistan
Southeast Asia	Cambodia
Southeast Asia	Indonesia
Southeast Asia	Laos
Southeast Asia	Malaysia
Southeast Asia	Myanmar
Southeast Asia	Philippines
Southeast Asia	Singapore
Southeast Asia	Thailand
Southeast Asia	Vietnam
South Asia	Afghanistan
South Asia	Bangladesh
South Asia	Bhutan
South Asia	India
South Asia	Nepal
South Asia	Pakistan
South Asia	Sri Lanka
East Asia	China
East Asia	Hong Kong S.A.R. of China
East Asia	Japan
East Asia	Mongolia
East Asia	South Korea
East Asia	Taiwan Province of China
Latin America and Caribbean	Argentina
Latin America and Caribbean	Belize
Latin America and Caribbean	Bolivia
Latin America and Caribbean	Brazil
Latin America and Caribbean	Chile
Latin America and Caribbean	Colombia
Latin America and Caribbean	Costa Rica
Latin America and Caribbean	Cuba
Latin America and Caribbean	Dominican Republic
Latin America and Caribbean	Ecuador
Latin America and Caribbean	El Salvador
Latin America and Caribbean	Guatemala

Table 35: Countries/territories by Region

Region indicator	Country name
Latin America and Caribbean	Guyana
Latin America and Caribbean	Haiti
Latin America and Caribbean	Honduras
Latin America and Caribbean	Jamaica
Latin America and Caribbean	Mexico
Latin America and Caribbean	Nicaragua
Latin America and Caribbean	Panama
Latin America and Caribbean	Paraguay
Latin America and Caribbean	Peru
Latin America and Caribbean	Suriname
Latin America and Caribbean	Trinidad and Tobago
Latin America and Caribbean	Uruguay
Latin America and Caribbean	Venezuela
North America and ANZ	Australia
North America and ANZ	Canada
North America and ANZ	New Zealand
North America and ANZ	United States
Middle East and North Africa	Algeria
Middle East and North Africa	Bahrain
Middle East and North Africa	Egypt
Middle East and North Africa	Iran
Middle East and North Africa	Iraq
Middle East and North Africa	Israel
Middle East and North Africa	Jordan
Middle East and North Africa	Kuwait
Middle East and North Africa	Lebanon
Middle East and North Africa	Libya
Middle East and North Africa	Morocco
Middle East and North Africa	Oman
Middle East and North Africa	Palestinian Territories
Middle East and North Africa	Qatar
Middle East and North Africa	Saudi Arabia
Middle East and North Africa	Syria
Middle East and North Africa	Tunisia
Middle East and North Africa	Turkey
Middle East and North Africa	United Arab Emirates
Middle East and North Africa	Yemen
Sub-Saharan Africa	Angola
Sub-Saharan Africa	Benin
Sub-Saharan Africa	Botswana
Sub-Saharan Africa	Burkina Faso
Sub-Saharan Africa	Burundi

Table 36: Countries/territories by Region

Region indicator	Country name
Sub-Saharan Africa	Cameroon
Sub-Saharan Africa	Central African Republic
Sub-Saharan Africa	Chad
Sub-Saharan Africa	Comoros
Sub-Saharan Africa	Congo (Brazzaville)
Sub-Saharan Africa	Congo (Kinshasa)
Sub-Saharan Africa	Djibouti
Sub-Saharan Africa	Ethiopia
Sub-Saharan Africa	Gabon
Sub-Saharan Africa	Gambia
Sub-Saharan Africa	Ghana
Sub-Saharan Africa	Guinea
Sub-Saharan Africa	Ivory Coast
Sub-Saharan Africa	Kenya
Sub-Saharan Africa	Lesotho
Sub-Saharan Africa	Liberia
Sub-Saharan Africa	Madagascar
Sub-Saharan Africa	Malawi
Sub-Saharan Africa	Mali
Sub-Saharan Africa	Mauritania
Sub-Saharan Africa	Mauritius
Sub-Saharan Africa	Mozambique
Sub-Saharan Africa	Namibia
Sub-Saharan Africa	Niger
Sub-Saharan Africa	Nigeria
Sub-Saharan Africa	Rwanda
Sub-Saharan Africa	Senegal
Sub-Saharan Africa	Sierra Leone
Sub-Saharan Africa	Somalia
Sub-Saharan Africa	Somaliland region
Sub-Saharan Africa	South Africa
Sub-Saharan Africa	South Sudan
Sub-Saharan Africa	Sudan
Sub-Saharan Africa	Swaziland
Sub-Saharan Africa	Tanzania
Sub-Saharan Africa	Togo
Sub-Saharan Africa	Uganda
Sub-Saharan Africa	Zambia
Sub-Saharan Africa	Zimbabwe